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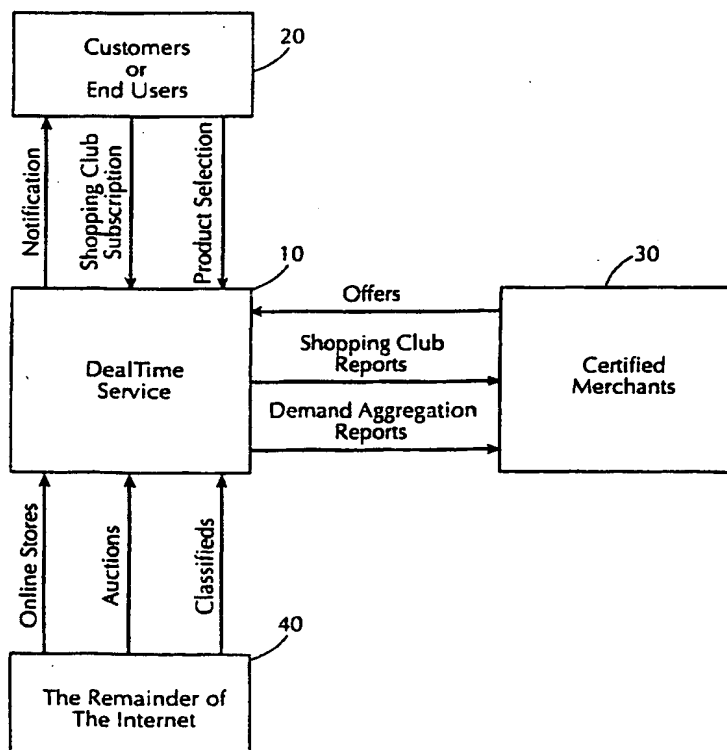
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(54) Title: E-COMMERCE DEMAND AGGREGATION

(57) Abstract

Systems and methods for conducting e-commerce provide aggregation of the demand by customers for a product or service. The method provides a computer network-accessible server that accepts requests from customers (20) for goods or services, a request from a customer including at least a description of a desired purchase. The server (10) accumulates the requests and permits a merchant (30) access over the computer network to the accumulation of requests. The merchant (30) can make an offer that satisfies at least one of the requests, which offer can be accepted by the server (10). The server (10) notifies the customer of the merchant and of the offer that satisfies the request sent by the customer.



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E-COMMERCE DEMAND AGGREGATION

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Cross-Reference to Related Application

This application is based on and claims priority to and the benefit of U.S. Provisional Patent Application Serial No. 60/118,684, filed February 5, 1999, the entire contents of which is hereby incorporated herein by reference.

10

Technical Field

The invention relates to conducting demand-driven electronic commerce (hereinafter "e-commerce"), and in particular e-commerce in which a customer can be notified into the future of opportunities that suit the customer's specific request and of opportunities in which the customer's request can be aggregated with similar requests of other customers.

Background Information

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Electronic commerce is a rapidly growing field of business. The opportunity for customers and for merchants to make known what they require and what they can supply, respectively, has been greatly enhanced by the availability of communication via the Internet. To place this development in historical perspective: in conventional commercial activity as practiced prior to the advent of the Internet, vendors typically advertise in print media and in electronic media such as radio and television by means of commercial messages that are broadcast to an entire populace at large. Customers seeking a good deal are forced to visit or call merchants to determine price and availability of items that they wish to purchase, which can be both tedious and time consuming. Customers can additionally place want ads in various print media that are disseminated to the general populace, but this is typically a very inefficient process.

30

Today, a customer can use a personal computer to locate on the Internet or the World Wide Web (hereinafter "the web") online storefronts and/or advertisements posted

by vendors who have specific products for sale. Readily available and easily accessible information can in principle create a nearly perfect market where consumers can always choose the deal that suits them best from a wide variety of offerings and suppliers can reach all prospective customers without the need for a middleman. However, in practical
5 experience, there are barriers on the road to such a perfect marketplace. One barrier is information overload created by the sheer volume of information that can be located. Another barrier is information accuracy based on the fact that this information is highly dynamic and can change quickly in time.

There are many thousands of web sites on the Internet offering merchandise in a
10 large variety of categories. This merchant community is growing very rapidly. Comparison shopping services that help users find their way through this vast array of information are available. Examples of such services include Bottom Dollar (www.bottomdollar.com), mySimon (www.mysimon.com), Jango (www.jango.com) and others. Such services allow users to specify a product or service they are looking to buy
15 and a price range they would like to buy it at. Comparison shopping services attempt to find as many deals as possible offered on the Internet that fall within the user specified range.

Even as the wealth of information is addressed by the comparison shopping services, or "shopping bots" described above, no adequate solution is provided with
20 regard to the dynamic nature of the information. The comparison shopping services provide information that represents a "snapshot" of the available deals as of a particular time. With the advent of selling techniques such as auctions, classifieds and special sale events of short duration that have greatly proliferated over the Internet, a "snapshot" provides inadequate information in real time.

Another shortcoming of conventional shopping techniques relates to the inability
25 of an individual or customer to bargain for a better deal based on volume. In the conventional shopping situation, vendors have appreciable ability to determine what discounts will be available to volume purchasers, and to withhold such volume discounts from individual customers.

One method of e-commerce that is already being exploited is the posting of the
30 electronic equivalent of printed catalogs on web sites. One feature of such commercial activity is the sale of large quantities of standard commercial products in a single

transaction to corporate purchasers. One advantage of such commercial commodity ordering systems is that a corporate purchaser can standardize its commodity ordering practices, and may obtain more advantageous prices by placing volume orders. An example of such a web site is www.tpnregister.com.

5 In general, individual consumers have not had the opportunity to obtain such advantageous prices because individuals often do not need the quantities of goods or services that would command a discounted price. Generally, the entity that can obtain the commercial advantage of volume purchasing in the consumer setting is a wholesaler or volume retailer, rather than the individual customer or end-user.

10 In the field of e-commerce, there are firms that sell consumer items in large quantity. An example is the purchase of books from e-commerce businesses such as amazon.com and barnesandnoble.com. The model that such businesses appear to follow is similar to that of other large retailers, but with transactions taking place via the web. The customer obtains as a benefit the convenience of shopping from any location that a
15 personal computer is available, at any hour, for the price of a local telephone call, with delivery of the desired product to the customer's door. However, e-commerce as practiced in this model does not afford the individual customer any additional competitive advantage as compared to a conventional retail purchase.

Another model that has appeared in the context of e-commerce is the opportunity
20 for an individual consumer to propose a price for a desired good or service, which is then presented to one or more vendors who may accept the terms that are proposed. An example of such e-commerce is the sale of airline tickets in response to a consumer's proposed price posted on the web site www.priceline.com. In this model, the driving force appears to be the fact that the time-sensitive service offered is one that would be
25 wasted in the absence of a bid by a customer that is acceptable to a service provider. The web site www.priceline.com presents as an example the assertion that airlines fly airplanes with over 500,000 empty seats every day, which generate no revenue for these airlines. The inference is that an airline might prefer to generate some revenue, provided that such a sale did not eliminate a ticket sale at a higher price.

30 The above examples indicate that, while e-commerce may offer some advantages over conventional retail commercial activity, there are still considerable shortcomings and limitations in the practice of e-commerce.

Summary of the Invention

In accordance with the invention, e-commerce is conducted in such a way that a customer is notified into the future about opportunities suited to the customer's specific request. Also the invention relates to making available to the customer opportunities to
5 aggregate the customer's request with similar requests of other customers, thereby providing the customer with a requested good or service at more favorable terms, such as a lower price.

In one aspect, the invention features a method of aggregating demand in
10 electronic commerce, comprising the steps of providing a server accessible over a computer network, accepting requests over a computer network, each of the requests including at least a description of a desired purchase, and accumulating the accepted requests in the server. The method further comprises the steps of permitting a merchant access over the computer network to the accumulation of requests, accepting over the
15 computer network, from the merchant, an offer that satisfies at least one of the requests in the accumulation, and notifying a customer of the merchant that made the offer that satisfies at least one of the requests in the accumulation and of the terms of the offer.

Embodiments of this aspect of the invention can have the following features. The method can inform a later-coming customer of the merchant that made the offer that
20 satisfies at least one of the request in the accumulation, the request being substantially similar to a request sent by the later-coming customer and of the terms of the offer. The method can comprise the step of repeating the steps of accepting requests sent by customers and accumulating the accepted requests. The method can comprise the step of repeating the steps of permitting a merchant to access the accumulation of requests,
25 accepting from the merchant an offer, and notifying at least one customer of the merchant and of the offer. The method can further comprise accepting a request that remains valid until a defined future time, and accepting from a merchant an offer that remains valid until a defined future time. The defined future time can be a target date. The method can comprise repeating the various repeating steps until the defined future time elapses. The
30 method can comprise notifying a customer of an offer via email, via desktop notifier, via pager, or when past or future customers access a Web page. The method can comprise

repeating the various repeating steps until the customer indicates that further notification is unnecessary.

In another aspect, the invention involves a system for demand aggregation in electronic commerce, comprising a server connected to a computer network, a module
5 operating on the server that can accept requests, each of the requests including at least a description of a desired purchase, and a module operating on the server that can accumulate the requests. The system further comprises a module operating on the server that can permit a merchant access over the computer network to the accumulation of requests and to the status of offers previously made in response to the accumulation of
10 requests, a module operating on the server that can accept over the computer network from the merchant an offer that satisfies at least one request in the accumulation, and a module operating on the server that can notify a customer of the merchant that made an offer that satisfies at least one request and of the terms of the offer.

Embodiments of this other aspect of the invention can have the following
15 features. The system can further comprise a module operating on the server than can notify a later-coming customer of the merchant and of the terms of the offer that satisfies the request in the accumulation that is substantially similar to a request sent by the later-coming customer. The system can further comprise a module operating on the server that repeatedly invokes the operation of the modules that can accept requests from customers,
20 and that can accumulate the requests from the customers. The system can still further comprise a module operating on the server that repeatedly invokes the operation of the modules that can permit a merchant access to the accumulation of requests and to the status of offers previously made, that can accept from the merchant an offer that satisfies a request in the accumulation, and that can notify at least one of the customers of the
25 merchant that made an offer that satisfies at least one request and of the terms of the offer. The system can include a module operating on the server that can accept requests sent by customers, a request sent by a customer including at least a description of a desired purchase, the request remaining valid until a defined future time, a module operating on the server that can accept over the computer network from the merchant an
30 offer that satisfies a request in the accumulation, the offer remaining valid until a defined future time, and modules that can repeatedly invoke the operation of the various repeating modules until the defined future time elapses. The defined future time can be a target

date. The system can include modules that can notify a customer via email, via desktop notifier, via pager, and when past or future customers access a Web page. The system can include modules that repeatedly invoke the operation of they various repeating modules until the customer indicates that further notification is unnecessary.

5 In yet another aspect, the invention involves a computer program recorded on a computer-readable medium, the computer program comprising a module that can accept requests over a computer network, each of the requests including at least a description of a desired purchase, a module that can accumulate the requests, and a module that can examine the accumulated requests to aggregate plural requests that include a substantially
10 similar description. The computer program further comprises a module that can permit a merchant access over the computer network to the accumulation of requests and to the status of offers previously made in response to the accumulation of requests, a module that can accept over the computer network from the merchant an offer that satisfies a request in the accumulation, and a module that can notify a customer of the merchant that
15 made an offer that satisfies at least one request and of the terms of the offer.

Embodiments of this other aspect of the invention can have the following features. The program can comprise modules that repeatedly invoke the operation of the modules that can accept requests over a computer network from customers, a request including at least a description of a desired purchase, that can accumulate the requests
20 from the customers, and that can examine the accumulated requests to aggregate plural requests that include a substantially similar description. The program can comprise modules that repeatedly invoke the operation of the modules that can permit a merchant access over the computer network to the accumulation of requests and to the status of offers previously made in response to the accumulation of requests, that can accept over
25 the computer network from the merchant an offer that satisfies a request in the accumulation, and that can notify at least one of the customers of the merchant that made an offer that satisfies at least one request and of the terms of the offer. The computer program can further comprise modules that can accept requests over a computer network from customers, a request including at least a description of a desired purchase, the
30 request remaining valid until a defined future time, that can accept over the computer network from the merchant an offer that satisfies a request in the accumulation, the offer

remaining valid until a defined future time, and modules that can repeatedly invoke the repeating modules until the defined future time elapses.

In still another aspect, the invention involves a method of aggregating demand, comprising the steps of inputting into a computer which has access to a computer network an offer comprising a description of an asset to be sold, a sale price for the asset, and a minimum order volume required to sustain the offer, and making the offer available over the computer network to customers. The method further comprises the steps of accepting, from at least one customer, over the computer network an indication of interest in purchasing at least some of the asset, accumulating the indications of interest to purchase at least some of the asset, and notifying each of the customers who sent the indications of the outcome of the offer. The method can further comprise the steps of repeatedly accumulating said indications of interest to purchase at least some of the asset and notifying each of the customers who sent the indications of the outcome of the offer until the accumulated indications of interest to purchase reach a pre-defined maximum quantity, or until a pre-defined time passes.

Embodiments of this aspect of the invention can have the following features. The method can include the step of inputting into the computer that has access to the computer network the offer that further comprises a minimum and optionally a maximum quantity of the asset to be offered. The method can include the step of accumulating said indications of interest to purchase at least some of the asset until the accumulation of indications of interest to purchase reaches the maximum quantity of the asset to be offered, or a pre-defined time has elapsed. The method can include the step of inputting into the computer that has access to the computer network the offer that further comprises a time period for which the offer will remain valid. The method can include the step of accumulating said indications of interest to purchase at least some of the asset until the earlier to occur of the accumulation of indications of interest to purchase reaches the maximum quantity or the time the offer will remain valid expires. The method can include the step of notifying customers of the quantity of the asset that remains to be purchased and the time remaining in which the offer will be valid.

In yet another aspect, the invention involves a system for aggregating demand, comprising a server connected to a computer network, a module operating on the server that can accept an offer for sale comprising a description of an asset to be sold, a sale

price for the asset, and a minimum order volume required to sustain the offer, a module operating on the server that can communicate the offer over the computer network to a personal computer of a customer, a module operating on the server that can accept an indication of interest to purchase at least some of the asset to be sold, a module operating
5 on the server that can accumulate said indications of interest to purchase at least some of the asset, and a module operating on the server that can notify the customer about the outcome of the offer.

Embodiments of this aspect of the invention can have the following features. The system can include a module that repeatedly invokes the operation of the modules that
10 can accept an indication of interest to purchase at least some of the asset to be sold, and that can accumulate said indications of interest to purchase at least some of the asset until the accumulated indications of interest to purchase reach a pre-defined maximum quantity, or until a pre-defined time passes. The system can include a module operating on the server that can accept an offer, the offer further comprising a maximum quantity of
15 the asset to be offered, a module operating on the server that can accumulate an indication of interest to purchase at least some of the asset to be sold until the accumulation of indications of interest to purchase reaches the maximum quantity of the asset to be offered, a module operating on the server that can accept an offer, the offer further comprising a time period for which the offer will remain valid, a module
20 operating on the server that can accumulate an indication of interest to purchase at least some of the asset to be sold until the accumulation of indications of interest to purchase until the time period for which the offer will remain valid expires, and a module operating on the server that can notify customers of the quantity of the asset that remains to be purchased and the time remaining in which the offer will be valid.

25 In still another aspect, the invention involves a method of aggregating demand, comprising the steps of providing a server accessible over a computer network, permitting a merchant access over the computer network to a history of requests made by one or more customers over a time period, accepting from the merchant an offer for sale of an asset, the merchant making said offer based on an analysis of the history of requests
30 made by the one or more customers over a time period, notifying a customer of the merchant and of the terms of the offer available over the computer network, and

accepting, from a customer, over the computer network an indication of interest in purchasing at least some of the asset.

Embodiments of this aspect of the invention can have the following features. The method can include a step that comprises accepting from the merchant an offer for sale of an asset, the offer further comprising a time period for which the offer will remain valid. The method can include a step that comprises accepting, from a customer, over the computer network an indication of interest in purchasing at least some of the asset until the time period for which the offer will remain valid expires. The method can include a step that further comprising notifying a customer of the quantity of the asset that remains to be purchased and the time remaining in which the offer will be valid. The method can include a step that comprises notifying a customer via e-mail, via desktop notifier, via pager, or when the customer accesses a Web page.

In yet another aspect, the invention involves a system for aggregating demand, comprising a server connected to a computer network, a module operating on the server that can permit a merchant access over the computer network to a history of requests made by one or more customers over a time period, a module operating on the server that can accept from the merchant an offer for sale of an asset, the merchant making said offer based on an analysis of the history of requests made by the one or more customers over a time period, a module operating on the server that can notify customers of the merchant and of the terms of the offer available over the computer network, and a module operating on the server that can accept, from a customer, over the computer network an indication of interest in purchasing at least some of the asset.

Embodiments of this aspect of the invention can have the following features. The system can include a module operating on the server that can repeatedly invoke the operation of the modules that can notify a customer of the merchant and of the offer, that can accept from a customer an indication of interest in purchasing, and that can accumulate the indications of interest until the accumulated indications of interest to purchase reach a pre-defined maximum quantity. The system can include a module operating on the server that can repeatedly invoke the operation of the modules that can notify a customer of the merchant and of the offer, that can accept from a customer an indications of interest in purchasing, and that can accumulate the indications of interest until a pre-defined time passes. The system can include a module operating on the server

that can accept an offer, the offer further comprising a maximum quantity of the asset to be offered. The system can include a module operating on the server that can accumulate an indication of interest to purchase at least some of the asset until the accumulation of indications of interest to purchase reaches the maximum quantity of the asset to be offered. The system can include a module operating on the server that can accept an offer, the offer further comprising a time period for which the offer will remain valid. The system can include a module operating on the server that can accumulate an indication of interest to purchase at least some of the asset until the accumulation of indications of interest to purchase until the time period for which the offer will remain valid expires. The system can include a module operating on the server that can notify customers of the quantity of the asset that remains to be purchased and the time remaining in which the offer will be valid. The system can include a module operating on the server that can notify a customer via e-mail, via desktop notifier, via pager, or when the customer accesses a Web page.

The foregoing and other objects, aspects, features, and advantages of the invention will become more apparent from the following description and from the claims.

Brief Description of the Drawings

In the drawings, like reference characters generally refer to the same parts throughout the different views. Also, the drawings are not necessarily to scale, emphasis instead generally being based upon illustrating the principles of the invention.

FIG. 1 is a schematic overview of an embodiment of an e-commerce system showing the interrelationships between and among the system and the end users or customers, the certified merchants, and the remainder of the Internet.

FIG. 2 is a schematic overview of an embodiment of the invention.

FIG. 3 is a schematic diagram of system hardware and software that can provide the systems and methods according to the invention.

FIG. 4 depicts a flow diagram of the Shopping Club operation as seen from the perspective of a customer or end user, according to the invention.

FIG. 5 depicts a flow diagram of the Shopping Club operation as seen from the perspective of a merchant or vendor, according to the invention.

FIG. 6a depicts a flow diagram of an embodiment of the operation of a Shopping Club including both the activities of customers and certified merchants, according to the invention.

FIG. 6b depicts a flow diagram of an embodiment of the operation of an offer by
5 a certified merchant, in response to a history of requests by customers, according to the invention.

FIG. 7 depicts a flow diagram of the notification operation, showing the relative time sequence of the interactions between a customer and the DealTime service, and of the activities of the DealTime service, according to the invention.

10 FIG. 8 depicts a flow diagram of an embodiment of the Demand Aggregation operation that employs the Deal Agent on the DealTime web site.

FIG. 9 depicts a screen display that appears on the customer or end user's computer during the operation of an embodiment of the invention.

15

Description

One embodiment of the invention involves a web site on the World Wide Web with the address www.DealTime.com (hereinafter "DealTime.com"). The invention includes both systems and methods for conducting demand-driven e-commerce. The
20 systems and methods embodied in DealTime.com enable users to exploit fully and efficiently the dynamic, information-rich nature of the Internet generally and the World Wide Web particularly. The systems and methods embodied in DealTime.com feature real-time e-commerce notification services to alert users of time varying product events, for example in auctions, classifieds and closeout sales, that are carried into the future by
25 repetition of the notification with updates over time. Another feature of the systems and methods embodied in DealTime.com is the ability to aggregate demand by collecting user requests for products and/or services and creating economies of scale that benefit both consumers and merchants. The notification and demand aggregation aspects of the invention are each of independent significance, and will be described individually. It will
30 become apparent, however, that the provision of notification together with demand aggregation offers advantages that neither aspect provides individually.

Auctions, classifieds and special sale events of short duration create an opportunity to cover the highly dynamic time dimension of electronic commerce by way of maintaining a relationship with customers that wish to optimize the timing of their purchase in a way that will truly allow them to get the best possible deal for the product of their choice. These customers use the market variation in time to their advantage by being notified on such variations as they happen enabling them to make an informed purchase decision.

In order to facilitate the above purchase methodology, in one embodiment, the customer communicates his or her purchase requirements to the system, which stores these requests in a computer database. In this embodiment, another portion of the database continuously tracks relevant merchants for offers of sale items that satisfy those requirements. In this embodiment, the customer additionally specifies one or more communication channels, such as e-mail, by which information describing purchase opportunities can be transmitted in a timely manner, when a match is found between a purchase requirement and a sale offer. In this embodiment, the customer can also specify a time by which he or she would like to complete the desired purchase.

The existence of a repository of customer product requirements for a time period creates an opportunity to identify demand for any given product by a number of customers, and to leverage such demand to the advantage of both merchants and customers. The communication channels with the customers can serve to communicate purchase opportunities as they occur.

FIG. 1 is a schematic overview of an embodiment of an e-commerce system showing the interrelationships between and among the system and the end users or customers, the certified merchants, and the remainder of the Internet. Since DealTime.com is a web site, communication between customers and DealTime.com and between certified merchants and DealTime.com occurs over the Internet. The term "the remainder of the Internet" refers to Internet users and web sites that are neither "customers" nor "certified merchants." Both the terms "customer" and "certified merchant" will be described in more detail below. The DealTime Service 10 indicates an embodiment of the methods and systems of the present invention.

The DealTime Service 10 accepts requests from customers or end users 20. A user of the web becomes a customer by visiting the DealTime.com web site and

registering a request with the DealTime.com web site. In the following discussion, the term "desired purchase" is intended to refer to some good or service or other thing of value that one may wish to obtain. Examples of "desired purchases" can include but are not limited to a home appliance such as a television that customer wishes to buy, an object such as an automobile that a customer wishes to lease, or a service such as transportation or entertainment that a customer wishes to enjoy by purchasing a ticket or making a reservation. Other examples of benefits that a customer might seek to obtain through the use of the invention include the provision of information that is accessible via the Internet, such as news or financial data. A request can include a description of a desired purchase of a customer 20, a maximum price the customer 20 is prepared to pay, a target point in the future by which the customer 20 wants to complete the transaction, and other relevant information that the customer 20 may provide, such as quantity required. In another embodiment, the customer 20 may provide a request based on a product or service described on the DealTime Service 10 web site. Such communications by a customer 20 are denoted in FIG. 1 by the arrow labeled Product Selection. In still another embodiment, the customer 20 may express interest in subscribing to or joining a Shopping Club, which will be more fully discussed below. The communication the customer 20 sends to the DealTime Service 10 to initiate a Shopping Club subscription is depicted by the arrow labeled Shopping Club subscription.

In this embodiment, the DealTime Service 10 has the ability to communicate in a variety of ways with the customer 20. As indicated in FIG. 1 by the arrow labeled Notification, the DealTime Service 10 can communicate to the customer 20 immediately during an on-line connection via the web, and can also communicate with the customer 20 via e-mail, via pager, and via Desktop Notifier at the preference of customer 20.

Desktop Notifier is a custom software application of the DealTime Service 10 that is described more completely below. In general, such communication from the DealTime Service 10 to the customer 20 is carried out to inform the customer 20 of offers that satisfy the criteria that the customer 20 has indicated in the request that the customer 20 communicated to the DealTime Service 10. The subject matter of the communication can be a desired purchase, a quotation of the price of a share of stock, or news information that is of interest to the customer. As will be described more completely below, the notification process can be repeated from time to time so as to apprise the customer 20 of

new information that the DealTime Service 10 locates through continual searches that it performs.

Through DealTime.com users can personalize product and service selections and the price at which such selections are of interest for them. The service notifies users
5 through a notification vehicle of their choice regarding the availability of such products or services on a wide variety of merchant, auction and classified sites. Initially the service provides a "snapshot" of available deals in user selected areas any time the user enters the site. It then goes on to expand significantly upon this static snapshot through continuously monitoring the Internet for future occurrences of even better bargains, and
10 then providing real time alerts to consumers when such bargains become available.

A feature of the invention that is embodied in the DealTime.com service is that it enables comparison-shopping technology to be integrated with auction site information. Through the notification technology, users are able to define how long before an auction ends that they would like to be notified if their product selection falls in the price range
15 that they specify, so they can then enter their bid. The notification technology allows price comparisons among regular merchants, classifieds and auctions in a manner that 'snapshot' comparisons cannot, because notification technology permits the customer to observe variations in price and availability over time.

Auction sites have become ubiquitous on the Internet. They represent one of the
20 most dynamic forms of e-commerce. However, it is impossible to embed auction sites in static price comparisons in a meaningful manner. This is a result of how auctions are carried out. As an example, a \$2000 computer may have a starting bid price of \$1 and the auction may go on for hours or days before the highest bid starts to approach the closing price. DealTime.com enables the comparison of retail sites with auctions, by
25 permitting the user to define how much time before an auction ends the user wants to be notified in case the product and the price matches the user's selection. This capability enables such users to filter out unwanted reports from auctions in their early stages and permits users to turn their attention to e-commerce events that can yield real shopping value.

30 DealTime.com adds personalization as well as timeliness to electronic commerce. DealTime.com automated shopping agents consolidate offerings from a multitude of on-line stores, auction sites and classified ads in a continually updated database. A second

database contains user profile information, supplied by the user and detailing the specifics of the items that he or she wishes to purchase. The DealTime.com service frequently checks newly available deals against customer preferences, instantly notifying users of relevant deals via the Desktop Notifier desktop client, e-mail, or pager.

5 FIG. 1 also depicts the relationship and interaction of the DealTime Service 10 with certified merchants 30 who have registered with the DealTime Service 10. The DealTime Service 10 can create aggregations of the requests of multiple customers 20 that include a plurality of requests for some specific desired purchase. Merchants certified by DealTime.com receive a password protected web page by which they can
10 retrieve information regarding the number of concurrent requests for any given product as indicated in FIG. 1 by the arrow labeled Demand Aggregation Reports. They can respond to demand for such product by submitting a new offer to sell the product to the customers 20 who made the concurrent requests. Existing customers 20 looking for the product will be notified on the new offer and all future customers 20 searching for it will
15 see it as part of their search results. In another embodiment, the DealTime Service 10 itself can create a purchasing opportunity by identifying a certified merchant 30 that can provide at least a minimum quantity of a good or service that is likely to be in demand by the customers 20. To this end, the DealTime Service 10 can create a Shopping Club, which is an aggregated purchasing opportunity for a specific good or service whereby the
20 customers 20 who have expressed interest in acquiring the good or service can use their combined purchasing power to obtain the good or service at better terms than any of the customers 20 could command individually. An individual customer 20 who combines his or her purchasing power with others does not have to know who the other customers 20 are, nor does the individual customer 20 have to find others to make purchases. The
25 DealTime Service 10 includes tools that permit the web site administrator to identify demand created by customers 20, and to create a Shopping Club based on the requests of the customers 20.

A Shopping Club will in general require that a minimum number of orders must be placed within a specified time period in order to bind both the customers 20 and the
30 certified merchant 30. Once a Shopping Club has been set up, the DealTime Service 10 from time to time provides reports to the certified merchant 30, as indicated by the arrow labeled Shopping Club Reports, so that the certified merchant 30 can monitor the

progress of orders. In the event that the minimum number of orders is reached or exceeded within the specified time period, the orders are placed and fulfilled. In both embodiments described above, certified merchants 30 can submit sales offers to a community of customers 20 seeking a common product or service as described by the arrow labeled Offers. The interaction of the certified merchant 30 with the DealTime Service 10 is described more fully below.

FIG. 1 further depicts the interaction of the DealTime Service 10 with the remainder of the Internet 40 or the web. The DealTime Service 10 includes a plurality of web crawlers, which will be described in more detail below. A web crawler is a computer program or computer process that can contact other web sites and can explore the information presented at a contacted site. A web crawler can have the ability to search for specific information on the web, and can both catalog the location of the information of interest that it finds, as well as downloading a copy of some or all of the content of interest that is located.

As depicted in FIG. 1, the DealTime Service 10 can by this web crawler capability obtain information relating to goods and services that are available on the remainder of the Internet, and information relating to the vendors of such goods and services. The information that can be obtained can include offers available through online stores (e.g., vendors such as amazon.com), offers available through auctions (e.g., offers presented via online auctioneers such as ebay.com), and offers available by classified postings on the web. The information so obtained can be communicated to a customer 20 who is interested in the specific good or service that is offered.

FIG. 2 is a schematic overview of an embodiment of the invention, as represented by DealTime Alert Service. At the left of FIG. 2 are depicted some of the kinds of information that is available on the web, including online auctions, person to person auctions, classifieds, last minute deals, and sale/closeout offers. Many of these kinds of transactions are time-sensitive. As already noted, such information relating to the offer of goods and services can be located by one or more web crawlers 11 that are depicted as a part of the DealTime Service 10.

The information retrieved by a crawler 11 can be stored in a deal database 12 that is maintained by the DealTime Service 10. The deal database 12 contains aggregated information from e-commerce sites. This information is sorted by the specific attributes

of each product or service. For example, desktop computers can be sorted by their manufacturer, model number, amount of hard disk and RAM as well as other features. As a crawler 11 obtains more current information, or new information, the deal database 12 can be updated or augmented as appropriate. The crawlers 11 periodically scan
5 targeted auction, classified ad, Internet merchant and service provider sites and bring information about new deals into the deal database 12.

In one embodiment, DealTime.com has developed technology that enables the creation of a new crawler dedicated to parsing a specific e-commerce site into the deal database 12, with minimum effort and using relatively unskilled personnel. This enables
10 DealTime.com to add new e-commerce sites to its deal database 12 inexpensively and at a rapid pace. The technology has two primary components, a high level, site description language, and a dictionary that contains the product and service description elements in many different categories. This dictionary continuously "learns" the terms used in different areas and then identifies and correlates such terms as various crawlers examine
15 and parse merchant sites.

FIG. 2 also depicts a personal computer 22 or a customer 20. The customer 20 can use this personal computer 22 to communicate with the DealTime web site 15 via the Internet. As depicted in FIG. 2, the customer 20 can transmit via personal computer 22 the information necessary to initiate action by the DealTime Service 10, namely, a
20 request for a desired product or service, along with information that identifies the user to the DealTime Service 10, which is collectively represented as the arrow labeled user personalization 16. This request information is maintained by DealTime Service 10 in a user database 14 that can be accessed by the DealTime Service 10 even when the customer's personal computer 22 is no longer connected to the DealTime Service 10.
25 The user database 14 contains information about customers or users and the products and services about which they would like to be alerted. Each user is assigned a unique user number. Desired product and service category information is stored for each user, as well as the user's requested notification preference and preferred type of e-commerce site.

FIG. 2 further depicts a matching engine 13 that can compare the requests of
30 customers 20 that are recorded in user database 14 with the information about offers of goods and services that are recorded in deal database 12. The matching engine 13 uses highly efficient comparison methods. When a record of an offer is found that matches a

record of a request, the pertinent information is made available to the user via any of the available notification channels that the customer 20 has selected. The customer 20 can be notified via e-mail notification channel 17, via Desktop Notifier using desktop notification channel 18, or by pager notification via pager channel 19 that sends a
5 message to the customer's Internet-based pager device through the intermediation of a typical radio tower 123 using conventional pager technology. Desktop Notifier is a custom software application that the customer can download from the DealTime web site 15. This application adds a resident program to the customer's personal computer 22 that permits the personal computer 22 to automatically connect to the DealTime web site 15.
10 The operation of Desktop Notifier is described more fully below.

Desktop Notifier displays alerts of user defined events. An event can be, for example, a product becoming available on the Internet in the price range defined by a user, a news item in the user's area of interest, or a stock price reaching a predefined value. The Notifier can also fetch the user's stock portfolio data periodically and
15 displays it in a stock summary.

Desktop Notifier uses the same personal preferences as those defined in each user's selections and delivers time-sensitive content to the desktop. For example, events signifying stock prices, travel information or news matching the user's interests can be reported. The user can go about doing his or her work while the Desktop Notifier keeps
20 track of occurrences of special interest and allows him or her to take appropriate action in a timely manner.

FIG. 2 also depicts a personal computer 23 of a certified merchant 30. The certified merchant 30 can use this personal computer 23 to communicate with the DealTime web site 15 via the Internet. The certified merchant 30 can use the personal
25 computer 23 to retrieve information of customer demand for certain products in the Deal Data Base 12, or to obtain information on Shopping Club status. The certified merchant 30 can use the personal computer 23 to respond to such information by submitting offers to DealTime customers 20.

FIG. 3 is a schematic diagram of system hardware and software that embodies the
30 system and methods according to the invention. In FIG. 3 there is depicted the DealTime web site 15 www.DealTime.com that serves as the entry point to the DealTime Service 10. Communication via the Internet with the DealTime web site 15 by customers 20 and

by certified merchants 30 is routed by the local director 28 to one of the one or more web servers 29 that are provided to handle communications. Once a connection has been established with the DealTime Service 10 via the DealTime web site 15 and a web server 29, the DealTime Service 10 routes the communication from the customer 20 or the certified merchant 30 to the appropriate area of the database system 24. The database system 24 includes one or more data storage devices 25 that can be divided into storage for both user database 14 and deal database 12. One or more database servers 27 are provided to allow access to the database storage 25 in real time. A database control system 26 is provided to oversee the proper operation of the database system 24, and to maintain control over access to the data storage devices 25. One or more web crawlers 11 are provided to search for specific information on the web and to retrieve information corresponding to requests for storage within the database system 24.

FIG. 4 depicts a flow diagram 50 of the Shopping Club operation of the DealTime Service 10 as seen from the perspective of a customer 20 or end user, according to the invention. The customer 20 has two options upon entering the DealTime Service 10. In the first case, the customer 20 can select a product or service, and optionally can state a maximum price that the customer 20 is prepared to pay, as depicted at box 52. Alternatively, the customer 20 can view a list of currently existing Shopping Clubs, as depicted at box 54. If an existing Shopping Club is available that provides the good or service that the customer 20 desires, he or she can select that Club, as depicted at box 56. If the customer 20 selects a Club, he or she can choose to join the Club after seeing the terms that the Club offers for the good or service, as depicted at box 58. A Club's terms will include at least a description of the goods or services, a price, any charges for shipping and handling, information about product availability, and the minimum number of orders that are required by the vendor for the Club to operate. A customer 20 who communicates a request that corresponds to an existing Club will be informed of the existence of the Club, as depicted at box 60. The customer 20 will be offered the chance to join the Club, after seeing the terms that the Club offers for the good or service, as depicted at box 58. The customer 20 who chooses to join the Club is then added as a member, as depicted at box 66.

In the event that the customer 20 has requested a good or service for which there is no existing Shopping Club, the DealTime Service 10 will determine whether there is a

reasonable basis for creating a new Shopping Club for the requested good or service, as depicted at box 62. The basis for such a determination can include an analysis of such factors as the likely size of the Club and the likely availability of a suitable vendor. If a new Club appears to be appropriate, the DealTime Service 10 creates a new Club, as depicted at box 64, and enters the customer 20 as a member.

Once a Club exists and a customer has become a member, the DealTime Service 10 then operates an iterative process relating to the acceptance of offers. FIG. 4 depicts this iterative process beginning at box 68, where an offer is presented to each customer 20 who has become a member of the Club in question. The customer 20 may choose to accept or to reject the most recent offer, as depicted at box 70. If the customer 20 declines the offer, the customer 20 will receive any subsequent offers, which eventuality is depicted by the arrow that returns to box 68 from box 70. A customer 20 can traverse an indeterminate number of times the loop consisting of an offer at box 68 and a rejection of the offer at box 70, with a return to box 68 for the next offer. A customer 20 accepts the offer, by sending the DealTime Service 10 a communication representing a form of payment such as a credit card number or another form of financial commitment, as depicted at box 72. Upon such acceptance, the customer 20 has made an agreement to complete the desired purchase, provided that the number of commitments meets or exceeds the minimum number required by the vendor. The DealTime Service 10 determines whether there have been a sufficient number of commitments to purchase the good or service that is the object of the Club at box 74. The DealTime Service 10 continues to offer the good or service for the duration of the time that the Club is still valid to other interested customers 20, as depicted by the loop back to box 68, whether or not the total number of commitments to purchase the good or service that is the object of the Club is below the minimum number. Upon the expiration of the of the time period for which the sale is valid, if a sufficient number of commitments to purchase have been received by the DealTime Service 10, the purchase by the members of the Club is completed by sending all of the financial and shipping information necessary to the appropriate vendor, who then completes the individual transactions with the customers 20 who have made commitments to purchase. The successful completion of a Club is depicted at box 76. However, in the event that the minimum number of commitments to purchase are not received by the DealTime Service 10 at the expiration of the period for

which the sale is valid, the Club is canceled, and the customers 20 who have made commitments to purchase are not charged, nor is the sale completed. If a vendor appears who is prepared to make a more advantageous bargain for the committed customers 20, the transaction is completed on the more favorable terms. Certified merchants 30 have an opportunity to view the progress of Clubs.

FIG. 5 depicts a flow diagram 80 of the Shopping Club operation as seen from the perspective of a merchant or vendor, according to the invention. A merchant begins by obtaining certification from the DealTime Service 10, as depicted at box 82. This involves a registration process in which a merchant sets up a password-protected web page on the DealTime Service 10. The certified merchant 30 can then subscribe to the DealTime Service 10 by selecting any number of products or services, as depicted at box 84. The certified merchant 30 may be informed of the formation of a new Shopping Club relating to products selected as depicted at box 84, when a new Club is formed, as depicted at box 86. The certified merchant 30 may choose to become involved in a Shopping Club, as depicted in the loop consisting of boxes 88, 90, 92 and 94. At box 88, the certified merchant 30 has the opportunity to examine the progress of an existing Club, as to the number of orders that have been committed to by customers 20, and as to the terms of the offer by the proposed vendor. The certified merchant 30 can decide not to make an offer of goods or services, as indicated at box 90, in which case the certified merchant 30 can continue to peruse the progress of the Club, as indicated by the arrow returning to box 88 from box 90. If the certified merchant 30 decides to make an offer of goods or services, the certified merchant 30 may do so by indicating the description of the goods or services, as well as a price, any shipping and handling charges, a delivery time or product availability, the minimum number of customer commitments required, and a time during which the offer will remain valid, as represented by box 92. The offering of the certified merchant 30 will then be available for commitments by customers 20 during the period for which the sale is valid. A certified merchant 30 can make an offer of goods or services that is a better bargain than the offer that exists in the Club. Upon the expiration of the of the period for which the sale is valid, if a sufficient number of commitments to purchase have been received by the DealTime Service 10, the purchase by the members of the Club is completed by sending all of the financial and shipping information necessary to the certified merchant 30, who then completes the

individual transactions with the customers 20 who have made commitments to purchase. The successful completion of a Club is depicted at box 96. However, in the event that the minimum number of commitments to purchase are not received by the DealTime Service 10 at the expiration of the period for which the sale is valid, the Club is canceled.

5 FIG. 6a depicts a flow diagram of an embodiment of the operation of a Club including both the activities of customers 20 and certified merchants 30, according to the invention. In this embodiment, when a Shopping Club is initiated, there is an indication by at least one customers 20 of an interest to purchase some good or service, or an indication by a certified merchant 30 that the good or service will be made available on
10 some terms for some period of time provided some minimum sales volume is reached. As an example, a customers 20 may wish to buy, and a first certified merchant 30 may wish to sell, widgets at \$100 each, if at least 25 sales are agreed to within 3 days. After some time, suppose that there are 15 customers 20 who have committed to make purchases.

15 In this embodiment, these customers 20 have received the offer, as depicted at box 68. The customers have decided to accept the offer, as depicted at box 70. The customers 20 have committed to make a purchase, by providing some appropriate financial indicator, as depicted at box 72. The total of committed customers 20 and the terms of the offer are maintained in records collectively depicted as Club offer 98.

20 There can be some number of customers 20 who have decided, after receiving the offer as depicted at box 68, to refrain from accepting the offer, as depicted at box 70. Such a customer 20 is informed of the progress of the Club, as depicted at box 68, until the time period that the Club is valid expires or until the customers 20 indicates that it is unnecessary to continue to provide information about the purchase.

25 In this embodiment, the first certified merchant 30 can follow the progress of the Club. The information recorded as the club offer 98 is available to the first certified merchant 30 for viewing via the password-protected web page that the certified merchant 30 received upon being certified the DealTime Service 10. The first certified merchant 30 can follow the progress of the number of commitments made to purchase the
30 product or service that is the object of the Shopping Club. According to the example, in this embodiment the first certified merchant 30 would see that there are 15 commitments

to purchase under the terms originally presented. Any other certified merchant 30 can also follow the progress of this Club.

In this embodiment, it is possible that a second certified merchant 30 observes the status of the Club and determines that an offer of widgets at \$95 each with a minimum
5 commitment of 30 is a reasonable offer to make, and one that would afford the second certified merchant 30 a suitable profit. If the second certified merchant 30 makes such an offer, the Club offer 98 can be updated to reflect the reduction in price and the larger minimum commitment requirement.

In this embodiment, some number of the customers 20 who have not accepted the
10 original offer now are presented with the updated offer. Some number of customers 20 who see the new offer may choose to accept the lower price. Suppose that 12 additional customers 20 make commitments at the \$95 price per unit. In this embodiment, the Club offer 98 will be updated to reflect this new total of 27 commitments at prices of at least \$95.

15 First certified merchant 30, or other certified merchants 30 who deal in widgets, may choose to make yet another offer, at a still lower price, and perhaps with a larger minimum number of commitments. Suppose a certified merchant 30 offers widgets at \$90 each with a minimum commitment of 40 sales. At some time, there will come a price below which no certified merchant 30 will consider an offer, because there is no
20 financial incentive to do so.

When the time period that the Club is valid runs out, there will either be no offer that has attracted a sufficient number of commitments, or there will be at least one offer that has attracted a minimum number of commitments. If no offer has attracted a minimum number of commitments, the Club expires and no purchases are made. If a
25 single offer has attracted a minimum number of commitments, the transactions are carried out according to the offer. In the event that the number of commitments is more than the number required to sustain more than one of the series of offers, the transaction can be carried out under the terms of the most advantageous offer that attracted its minimum number of commitments. As the example indicates, both the actions of the
30 customers 20 and the actions of one or more certified merchant 30 take place over time, with updated information being provided to both the customers 20 from time to time and to the certified merchants 30 on demand. If, in the example under discussion, a total of

40 or more commitments are received at prices at or above \$90, then all the customers 20 benefit from the lower price of \$90 per widget. If, however, there were 15 commitments at \$100, 12 commitments at \$95, and only 10 commitments at \$90, there would not be enough commitments to satisfy any of the offers individually. Thus, unless some
5 customers 20 were willing to make commitments at higher prices, or some certified merchant 30 agreed to make a sale at \$100 per unit for 15 units, at \$95 per unit for 27 units, or at \$90 per unit for 37 units, there would be no sale at all.

FIG. 6b depicts a flow diagram of an embodiment of the operation of an offer by a certified merchant 30, in response to a history of requests by customers 20, according to
10 the invention. As already described, customers 20 can make requests of the DealTime Alert Service 10 by sending a request to the DealTime web site 15. Such request is depicted by box 102, labeled Customer 20 Makes Request. These requests are recorded in the user database 14, which is depicted by box 103, labeled Request Added to User Database 14. A certified merchant 30 can access the user database 14 to review the
15 number of requests and the types of products and services that have been requested by customers 20, as depicted by box 105, labeled Merchant 30 Reviews User Database 14 History Over a Time Period. The review by the certified merchant 30 can include a review of the history of requests accepted over a period of time, such as the last 6 hours, or the last day, or the last week. Based on the information that the certified merchant 30
20 obtains from such a review, the certified merchant 30 can decide to make an offer of an asset to be sold, such as a good or a service that appears to be in demand. For example, based on such a review, a certified merchant 30 can observe that demand for a product is growing, or that a steady demand at a high level has occurred for some period of time. The certified merchant 30 can reasonably conclude that an offer of the product, good or
25 service will meet with a positive response, and can make such an offer, as depicted by the arrow labeled "YES" exiting decision diamond 107, labeled "Make Offer?." In the event that the certified merchant 30 declines to make an offer, the certified merchant 30 can continue to review the history of requests by customers 20, as depicted by the arrow labeled "NO" returning to box 105 from decision diamond 107. Once the certified
30 merchant 30 decides to make an offer of the product, good or service, the offer is recorded in deal database 12, as depicted by box 109, labeled Add Offer to Deal Database 12. The offer is handled in the same manner as any offer that is located by a search of the

web by a crawler 11. Customers 20 who have already expressed interest in the product, good or service being offered are then notified of the offer via their notification platform of choice, e-mail notifier 17, Desktop Notifier 18, pager 19, or when the customers 20 accesses the DealTime web site 15, until a pre-defined time passes, as depicted by box 111, labeled Notify Customers 20 of Offer. New, or later-coming, customers 20 searching for this product via the DealTime web site 15 will have this offer included in their search results, as depicted by box 113, labeled Notify Later-Coming Customers 20 of Offer. Both customers 20 who have already indicated interest in the product, good or service prior to its being offered, as well as later-coming customers 20, can be informed of the offer. Information about the offer can be provided to any customers 20 until a pre-defined time. The pre-defined time can be, for example, an expiration of the offer, or it can be a time specified by a customer 20 who indicates that after the pre-defined time no further notification about the offer is necessary. When a later-coming customer 20 has submitted a request to the DealTime Alert Service 10 via the DealTime web site 15 and the request is recorded in user database 14, the later-coming customer 20 becomes a customer 20 who can be notified in the same manner as any other customer 20. A status as a later-coming customers 20 thus applies only to one's first interaction with the DealTime Alert Service 10.

FIG. 7 depicts a flow diagram of the notification operation, showing the relative time sequence of the interactions between a customer 20 and the DealTime service 10, and of the activities of the DealTime service 10, according to the invention. In this diagram, the relative passage of time is indicated by vertical position on the diagram, a later event being positioned farther down the page than a relatively earlier event. The time axis is represented by an arrow, and is not to scale.

The operation of the DealTime Service 10 as related to a specific request by a specific customer 20 begins with the transmission of the request from the customer 20 to the DealTime Service 10 by means of a connection over the Internet, as indicated by box 102. The request is compared with the currently active Shopping Clubs to see if the request matches the subject of an existing Shopping Club, as depicted by diamond 104. If a suitable Shopping Club exists, the flow diagram follows the path of FIG. 4 beginning at box 54.

If a suitable Shopping Club does not exist, the customer's request is then matched with the offers recorded in the deal database 12, as depicted at box 106. Any deal offers that are appropriate matches are then communicated to the customer 20 as a snapshot of the deals then available on a Web page, as depicted at box 108.

5 The DealTime Service 10 then enters an iterative loop, comprising boxes 110, 112, 114, 116, and 118. At box 110, the DealTime Service 10 causes crawlers 11 to crawl the Internet to look for new deals. In addition, new deals offered by certified merchants 30 are collected, as depicted at box 110. All such new deals that appear are entered into the deal database 12, as depicted by box 110. The customer's request is then
10 matched against the deal database 12 once again, as depicted at box 112. At box 114, the DealTime Service 10 checks to see whether the time limit that has been set has expired, or if the customer 20 has terminated the notification process. If either test gives a positive result, the loop ends. If both tests give negative results, the DealTime Service 10 proceeds to box 116, at which point a search for a match between the customer's request
15 and the deal database 12 occurs. If a match is found at box 116, the customer 20 is notified of the deal that matches his or her request, as depicted at box 118. The relevant information (e.g., the description, price, availability, etc. of the desired purchase, and the vendor's name, address, telephone, e-mail address and any other relevant identifiers) is communicated to the customer 20 who requested the information. After notification of
20 the customer 20, the DealTime Service 10 returns to the searching mode as depicted at box 110, and another iteration begins. In, however, no match is found at box 116, there is no notification of the customer 20, but the DealTime Service 10 again returns to the searching mode as depicted at box 110, and another iteration begins.

FIG. 8 depicts the Demand Aggregation process embodied by the Deal Agent
25 implementation. The drawing is divided into the description of the flow on the left side and what the certified merchant 30 views for each stage on the right. Each certified merchant 30 receives a unique merchant ID and password. The certified merchant 30 logs on to the Deal Agent through a login screen by entering its ID and password combination, as depicted by box 150. Once in the system, the certified merchant 30 can
30 select a product category, as depicted at box 152, through the category screen. Then the certified merchant 30 is shown a product selection screen for the selected category. The box 154 embodies the selection of a product. For example, if the certified merchant 30

selected the computer laptop category, the product selection can include selecting the manufacturer, the model number, size of disk, amount of RAM, size of screen etc. As the certified merchant 30 refines the product parameters, statistics regarding the number of users seeking the product with parameters defined thus far are shown in the certified merchant's browser window. The certified merchant 30 can elect to enter an offer to the Deal Database 12, as depicted by box 156, via the Offer Entry Form. Such an offer is treated just like any offer that is found on the Internet i.e. customers 20 currently tracking a matching item will be notified of the new deal, as depicted by box 158, via their notification platform of choice, e-mail notifier 17, Desktop Notifier 18, pager 19, or when the customer 20 accesses the DealTime web site 15. New customers 20 searching for this product via the DealTime web site 15 will have this deal included in their search results at any time after the offer is submitted until it expires, as depicted by box 159, labeled Inform Later-Coming Customers.

FIG.9 depicts a screen display that appears on the customer or end user's computer during the operation of an embodiment of the invention. The Desktop Notifier is an interactive control that allows customers to interact with the DealTime Service 10 from a personal computer 22. The Desktop Notifier can be downloaded from the DealTime web site 15, and is self-installing on a computer that operates with the Windows operating system. Once the Desktop Notifier is installed, an icon appears in the Windows operating system task bar, typically at the lower right corner of a computer display.

The DealTime.com Desktop Notifier client is a computer application that resides on the user's computer. New deals or news items that are found to match the user's preferences are sent via the Internet to the user's Desktop Notifier. An icon on the user's task bar alerts the user that new deals or other content are on his or her Desktop Notifier. FIG.9 depicts the Desktop Notifier window 120. The Desktop Notifier window 120, invoked by clicking once on the Notifier icon in the task bar, is made up of the following sections, described from the top of the window to the bottom:

- **Partner's logo 122** In this embodiment, the partner is depicted as the Dealttime web site. Clicking on the logo takes you to the partner's web site.

- **Alert Browsing Arrows 124** These arrows are used to browse through alerts

or stock quotations.

• **Menu 126** contains two menu options: "File" and "Personalize." The main options in the "File" menu are Update... and Show History. The options in the "Personalize" menu are DealTime Alerts, News Topics, Stocks and Options. Clicking DealTime Alerts takes the customer 20 to the DealTime web site 15 where the customer 20 can select products for future tracking by the Desktop Notifier. Clicking News Topics or Stocks invokes web pages that allow the customer 20 to personalize his or her news topics and stock selections.

• **Topic Group 128** enunciates the alert topic that is displayed.

• **Time Stamp 130** indicates the local time the alert or stock value was received by the Notifier.

• **Subject 132** presents the alert's subject line, or stock ticker and company name.

• **Content 134** presents the substance of the alert and stock data.

• **Data Supplier 136** indicates the supplier that provided the data.

• **More Details From Web 138** Clicking the "More..." link invokes the default browser with the full body of the article in the case of news, or other detailed information in the case of other alerts or stock news. When a DealTime Alert appears, the customer 20 can click on the description of the product to reach the merchant's web site where a direct purchase of the product can be completed.

• **Alert/Stock Selection 140** View alerts or stock data by clicking the appropriate tab. When Stocks are selected, the user's stock portfolio is displayed in the Content area. The user can define Stock Alerts by clicking the "Alert when" link.

• **Promotion 142** is where advertisements and promotional data are displayed. Click in this area to get to the sponsor's web page.

5 Some of the features of the Desktop Notifier window 120 will now be described. The customer 20 can personalize his or her deal selection for tracking directly by connection to the DealTime web site 15 by clicking on the Personalize/Deals menu selection of the Desktop Notifier window 120. The DealTime product selection screen will appear and will allow the customer 20 to search for any specific product or service, and then have the DealTime Service track deals for the product or service into the future via the Desktop Notifier window 120.

In order to personalize News Topics, the customer clicks on the "Personalize" menu 126 and selects "News Topics" to invoke the web browser. The user is then brought to the personalization web page where he or she can edit the list of news topics delivered to his or her desktop.

5 In order to personalize Stock Alerts, the customer clicks on the "Personalize" menu 126 and selects "Stocks" to invoke the web browser. The user is then brought to the stock personalization area where he or she can edit his or her list of stocks to be tracked. After completing the selection of stocks, the user clicks the "Submit Preferences" so that the new settings take effect. In the absence of a personalized list of stocks to be tracked,
10 the Desktop Notifier will show a list of defaults, typically consisting of well-known stock indexes.

With the Desktop Notifier, users can also define alerts that indicate when a stock's price goes above or below values that have been specified, or changes by more than a specified amount. When the "Stocks" tab is selected, clicking the "Alert When" link
15 opens a dialog box that allows the user to modify these values. Stock values can be entered in decimal (e.g., 37.25) or fraction (e.g., 37¼) format. The alert itself is displayed in the alerts window. Once a stock alert occurs, it is reset and will not be shown again unless the alert value is re-entered.

In order to obtain data updates, the Desktop Notifier communicates with the
20 DealTime Service 10 via the Internet at fixed time intervals, or whenever the server initiates a communication session. This mechanism is automatic and does not require user intervention. If a user wishes to force a communication update manually in order to fetch the most current data, one opens the "File" menu 126 and selects "Update All" or "Update Stocks" depending on what information one wishes to update.

25 In order to customize the Desktop Notifier, the user can define how the Notifier behaves when it receives regular or breaking events by clicking on "Options" under the "Personalize" menu 126. The Notifier can open a Notification window upon receiving breaking news or on every alert. The user selects the appropriate button to define his or her choice.

30 Previous alerts displayed by the Desktop Notifier are stored for convenience. Selecting the "Show History" menu item from the "File" menu 126 can access a history

list of alerts. The word History then appears in red in the Topic Group line and the history is displayed.

Variations, modifications, and other implementations of what is described herein will occur to those of ordinary skill in the art without departing from the spirit and the scope of the invention as claimed. Accordingly, the invention is to be defined not by the preceding illustrative description but instead by the spirit and scope of the following claims.

What is claimed is:

CLAIMS

- 1 1. A method of aggregating demand in electronic commerce, comprising:
 - 2 (A) providing a server accessible over a computer network;
 - 3 (B) accepting requests over a computer network, each of the requests including
4 at least a description of a desired purchase;
 - 5 (C) accumulating the accepted requests in the server;
 - 6 (D) permitting a merchant access over the computer network to the accumulation
7 of requests;
 - 8 (E) accepting over the computer network, from the merchant, an offer that
9 satisfies at least one of the requests in the accumulation; and
 - 10 (F) notifying a customer
 - 11 (i) of the merchant that made the offer that satisfies at least one of the
12 requests in the accumulation; and
 - 13 (ii) of the terms of the offer.
- 1 2. The method of claim 1 further comprising the step of:
 - 2 (G) informing a later-coming customer
 - 3 (i) of the merchant that made the offer that satisfies at least one of the
4 requests in the accumulation, the request being substantially
5 similar to a request sent by the later-coming customer; and
 - 6 (ii) of the terms of the offer.
- 1 3. The method of claim 1 further comprising:
 - 2 (G1) repeating steps (B) and (C).
- 1 4. The method of claim 1 further comprising:
 - 2 (G2) repeating steps (D) through (F).
- 1 5. The method of claim 1 further comprising:
 - 2 (G1) repeating steps (B) and (C); and

3 (G2) repeating steps (D) through (F).

1 6. The method of claim 5 wherein

2 step (B) comprises accepting requests sent by customers over a computer
3 network, a request sent by a customer including at least a description of a desired
4 purchase, the request remaining valid until a defined future time;

5 step (G1) comprises repeating steps (B) and (C) until the defined future time
6 elapses; and

7 step (G2) comprises repeating steps (D) through (F) until the defined future time
8 elapses.

1 7. The method of claim 5 wherein

2 step (E) comprises accepting over the computer network, from the merchant, an
3 offer that satisfies at least one of the requests in the accumulation, the offer remaining
4 valid until a defined future time;

5 step (G1) comprises repeating steps (B) and (C) until the defined future time
6 elapses; and

7 step (G2) comprises repeating steps (D) through (F) until the defined future time
8 elapses.

1 8. The method of claim 1 wherein step (F) comprises notifying a customer of the
2 merchant and of the offer via e-mail.

1 9. The method of claim 1 wherein step (F) comprises notifying a customer of the
2 merchant and of the offer via desktop notifier.

1 10. The method of claim 1 wherein step (F) comprises notifying a customer of the
2 merchant and of the offer via pager.

1 11. The method of claim 1 wherein step (F) comprises notifying a customer of the
2 merchant and of the offer when the customer accesses a Web page.

1 12. The method of claim 5 wherein
2 step (G1) comprises repeating steps (B) and (C) until a target date defined by the
3 customer; and
4 step (G1) comprises repeating steps (D) through (F) until a target date defined by
5 the customer.

1 13. The method of claim 5 wherein
2 step (G1) comprises repeating steps (B) and (C) until the customer indicates that
3 further notification is unnecessary; and
4 step (G1) comprises repeating steps (D) through (F) until the customer indicates
5 that further notification is unnecessary.

1 14. A system for demand aggregation in electronic commerce, comprising:
2 (A) a server connected to a computer network;
3 (B) a module operating on the server that can accept requests, each of the
4 requests including at least a description of a desired purchase;
5 (C) a module operating on the server that can accumulate the requests;
6 (D) a module operating on the server that can permit a merchant access over the
7 computer network to the accumulation of requests and to the status of offers
8 previously made in response to the accumulation of requests;
9 (E) a module operating on the server that can accept over the computer network
10 from the merchant an offer that satisfies at least one request in the
11 accumulation; and
12 (F) a module operating on the server that can notify a customer
13 (i) of the merchant that made the offer that satisfies at least one
14 request; and
15 (ii) of the terms of the offer.

1 15. The system of claim 14, further comprising:
2 (G) a module operating on the server that can notify a later-coming customer

- 3 (i) of the merchant that made the offer that satisfies at least one of the
4 requests in the accumulation, the request being substantially
5 similar to a request sent by the later-coming customer; and
6 (ii) of the terms of the offer.

1 16. The system of claim 14, further comprising:

2 (G1) a module operating on the server that can repeatedly invoke the operation of
3 modules (B) and (C).

1 17. The system of claim 14, further comprising:

2 (G2) a module operating on the server that can repeatedly invoke the operation of
3 modules (D) through (F).

1 18. The system of claim 14, further comprising:

2 (G1) a module operating on the server that can repeatedly invoke the operation of
3 modules (B) and (C); and

4 (G2) a module operating on the server that can repeatedly invoke the operation of
5 modules (D) through (F).

1 19. The system of claim 18 wherein

2 module (B) comprises a module operating on the server that can accept requests
3 sent by customers, a request sent by a customer including at least a description of a
4 desired purchase, the request remaining valid until a defined future time;

5 module (G1) comprises a module operating on the server that can repeatedly
6 invoke the operation of modules (B) and (C) until the defined future time elapses; and

7 module (G2) comprises a module operating on the server that can repeatedly
8 invoke the operation of modules (D) through (F) until the defined future time elapses.

1 20. The system of claim 18 wherein

2 module (E) comprises a module operating on the server that can accept over the
3 computer network from the merchant an offer that satisfies a request in the accumulation,
4 the offer remaining valid until a defined future time;

5 module (G1) comprises a module operating on the server that can repeatedly
6 invoke the operation of modules (B) and (C) until the defined future time elapses; and

7 module (G2) comprises a module operating on the server that can repeatedly
8 invoke the operation of modules (D) through (F) until the defined future time elapses.

1 21. The system of claim 14 wherein module (F) comprises a module operating on the
2 server that can notify at least one customer of the merchant and of the offer via email.

1 22. The system of claim 14 wherein module (F) comprises a module operating on the
2 server that can notify at least one customer of the merchant and of the offer via desktop
3 notifier.

1 23. The system of claim 14 wherein module (F) comprises a module operating on the
2 server that can notify at least one customer of the merchant and of the offer via pager.

1 24. The system of claim 14 wherein module (F) comprises a module operating on the
2 server that can notify at least one customer of the merchant and of the offer when the at
3 least one customer accesses a Web page.

1 25. The system of claim 18 wherein
2 module (G1) comprises a module that can repeatedly invoke the operation of
3 modules (B) and (C) until a target date defined by the customer; and
4 module (G2) comprises a module that can repeatedly invoke the operation of
5 modules (D) through (F) until a target date defined by the customer.

1 26. The system of claim 18 wherein

2 module (G1) comprises a module that can repeatedly invoke the operation of
3 modules (B) and (C) until the customer indicates that further notification is unnecessary
4 and

5 module (G2) comprises a module that can repeatedly invoke the operation of
6 modules (D) through (F) until the customer indicates that further notification is
7 unnecessary.

1 27. A computer program recorded on a computer-readable medium, the program
2 comprising:

- 3 (A) a module that can accept requests over a computer network, each of the
4 requests including at least a description of a desired purchase;
- 5 (B) a module that can accumulate the requests;
- 6 (C) a module that can examine the accumulated requests to aggregate plural
7 requests that include a substantially similar description;
- 8 (D) a module that can permit a merchant access over the computer network to
9 the accumulation of requests and to the status of offers previously made in
10 response to the accumulation of requests;
- 11 (E) a module that can accept over the computer network from the merchant an
12 offer that satisfies at least one request in the accumulation; and
- 13 (F) a module that can notify a customer
 - 14 (i) of the merchant that made an offer that satisfies the at least one
15 request; and
 - 16 (ii) of the terms of the offer.

1 28. The computer program recorded on a computer-readable medium of claim 27,
2 further comprising:

- 3 (G1) a module that can repeatedly invoke the operation of modules (A) through
4 (C).

1 29. The computer program recorded on a computer-readable medium of claim 27,
2 further comprising:

3 (G2) a module that can repeatedly invoke the operation of modules (D) through
4 (F).

1 30. The computer program recorded on a computer-readable medium of claim 27,
2 further comprising:

3 (G1) a module that can repeatedly invoke the operation of modules (A) through
4 (C); and

5 (G2) a module that can repeatedly invoke the operation of modules (D) through
6 (F).

1 31. The computer program recorded on a computer-readable medium of claim 30,
2 wherein

3 module (A) comprises a module that can accept requests over a computer network
4 from customers, a request including at least a description of a desired purchase, the
5 request remaining valid until a defined future time;

6 module (G1) comprises a module operating on the server that can repeatedly
7 invoke the operation of modules (A) through (C) until the defined future time elapses;
8 and

9 module (G2) comprises a module operating on the server that can repeatedly
10 invoke the operation of modules (D) through (F) until the defined future time elapses.

1 32. The computer program recorded on a computer-readable medium of claim 30,
2 wherein

3 module (E) comprises a module that can accept over the computer network from
4 the merchant an offer that satisfies a request in the accumulation, the offer remaining
5 valid until a defined future time;

6 module (G1) comprises a module operating on the server that can repeatedly
7 invoke the operation of modules (A) through (C) until the defined future time elapses;
8 and

9 module (G2) comprises a module operating on the server that can repeatedly
10 invoke the operation of modules (D) through (F) until the defined future time elapses.

1 33. A method of aggregating demand, comprising:
2 (A) inputting a computer which has access to a computer network an offer
3 comprising a description of an asset to be sold, a sale price for the asset, and a minimum
4 order volume required to sustain the offer;
5 (B) making the offer available over the computer network to customers;
6 (C) accepting, from the customers, over the computer network indications of
7 interest in purchasing at least some of the asset;
8 (D) accumulating said indications of interest to purchase at least some of the
9 asset; and
10 (E) notifying each of the customers who sent the indications of the outcome of
11 the offer.

1 34. The method of claim 33, further comprising the step of:
2 (F) repeatedly accumulating said indications of interest to purchase at least
3 some of the asset and notifying each of the customers who sent the indications of the
4 outcome of the offer until the accumulated indications of interest to purchase reach a pre-
5 defined maximum quantity.

1 35. The method of claim 33, further comprising the step of:
2 (F) repeatedly accumulating said indications of interest to purchase at least
3 some of the asset and notifying each of the customers who sent the indications of the
4 outcome of the offer until a pre-defined time passes.

1 36. The method of claim 33 wherein step (A) comprises inputting into the computer
2 which has access to the computer network the offer which further comprises a
3 maximum quantity of the asset to be offered.

1 37. The method of claim 36 wherein step (D) comprises accumulating said
2 indications of interest to purchase at least some of the asset until the accumulation
3 of indications of interest to purchase reaches the maximum quantity of the asset to
4 be offered.

- 1 38. The method of claim 33 wherein step (A) comprises inputting into the computer
2 which has access to the computer network the offer which further comprises a
3 time period for which the offer will remain valid.
- 1 39. The method of claim 38 wherein step (D) comprises accumulating said
2 indications of interest to purchase at least some of the asset until the time period
3 for which the offer will remain valid expires.
- 1 40. The method of claim 33, further comprising notifying customers of the quantity of
2 the asset that remains to be purchased and the time remaining in which the offer will be
3 valid.
- 1 41. A system for aggregating demand, comprising:
2 (A) a server connected to a computer network;
3 (B) a module operating on the server that can accept an offer for sale
4 comprising a description of an asset to be sold, a sale price for the asset,
5 and a minimum order volume required to sustain the offer;
6 (C) a module operating on the server that can communicate the offer over the
7 computer network to a personal computer of a customer;
8 (D) a module operating on the server that can accept an indication of interest to
9 purchase at least some of the asset to be sold;
10 (E) a module operating on the server that can accumulate said indications of
11 interest to purchase at least some of the asset; and
12 (F) a module operating on the server that can notify the customer about the
13 outcome of the offer.
- 1 42. The system of claim 41, further comprising:
2 (G) a module operating on the server that can repeatedly invoke the operation
3 of the modules described in (D) and (E) until the accumulated indications
4 of interest to purchase reach a pre-defined maximum quantity.

- 1 43. The system of claim 41, further comprising:
2 (H) a module operating on the server that can repeatedly invoke the operation
3 of the modules described in (D) and (E) until a pre-defined time passes.
- 1 44. The system of claim 41 wherein module (B) comprises a module operating on the
2 server that can accept an offer, the offer further comprising a maximum quantity
3 of the asset to be offered.
- 1 45. The system of claim 44 wherein module (E) comprises a module operating on the
2 server that can accumulate an indication of interest to purchase at least some of
3 the asset to be sold until the accumulation of indications of interest to purchase
4 reaches the maximum quantity of the asset to be offered.
- 1 46. The system of claim 41 wherein module (B) comprises a module operating on the
2 server that can accept an offer, the offer further comprising a time period for
3 which the offer will remain valid.
- 1 47. The system of claim 46 wherein module (E) comprises a module operating on the
2 server that can accumulate an indication of interest to purchase at least some of
3 the asset to be sold until the accumulation of indications of interest to purchase
4 until the time period for which the offer will remain valid expires.
- 1 48. The system of claim 41, further comprising a module that can notify customers of
2 the quantity of the asset that remains to be purchased and the time remaining in
3 which the offer will be valid.
- 1 49. A method of aggregating demand, comprising:
2 (A) providing a server accessible over a computer network;
3 (B) permitting a merchant access over the computer network to a history of
4 requests made by one or more customers over a time period;

5 (C) accepting from the merchant an offer for sale of an asset, the merchant
6 making said offer based on an analysis of the history of requests made by the one or more
7 customers over a time period;

8 (D) notifying a customer of the merchant that made the offer and of the terms
9 of the offer available over the computer network; and

10 (E) accepting, from the customer, over the computer network an indication of
11 interest in purchasing at least some of the asset.

1 50. The method of claim 49 wherein step (C) comprises accepting from the merchant
2 an offer for sale of an asset, the offer further comprising a time period for which
3 the offer will remain valid.

1 51. The method of claim 50 wherein step (E) comprises accepting, from the customer,
2 over the computer network an indication of interest in purchasing at least some of
3 the asset until the time period for which the offer will remain valid expires.

1 52. The method of claim 49 wherein step (D) further comprising notifying a customer
2 of the quantity of the asset that remains to be purchased and the time remaining in
3 which the offer will be valid.

1 53. The method of claim 49 wherein step (D) comprises notifying the customer of the
2 merchant and of the offer via e-mail.

1 54. The method of claim 49 wherein step (D) comprises notifying the customer of the
2 merchant and of the offer via desktop notifier.

1 55. The method of claim 49 wherein step (D) comprises notifying the customer of the
2 merchant and of the offer via pager.

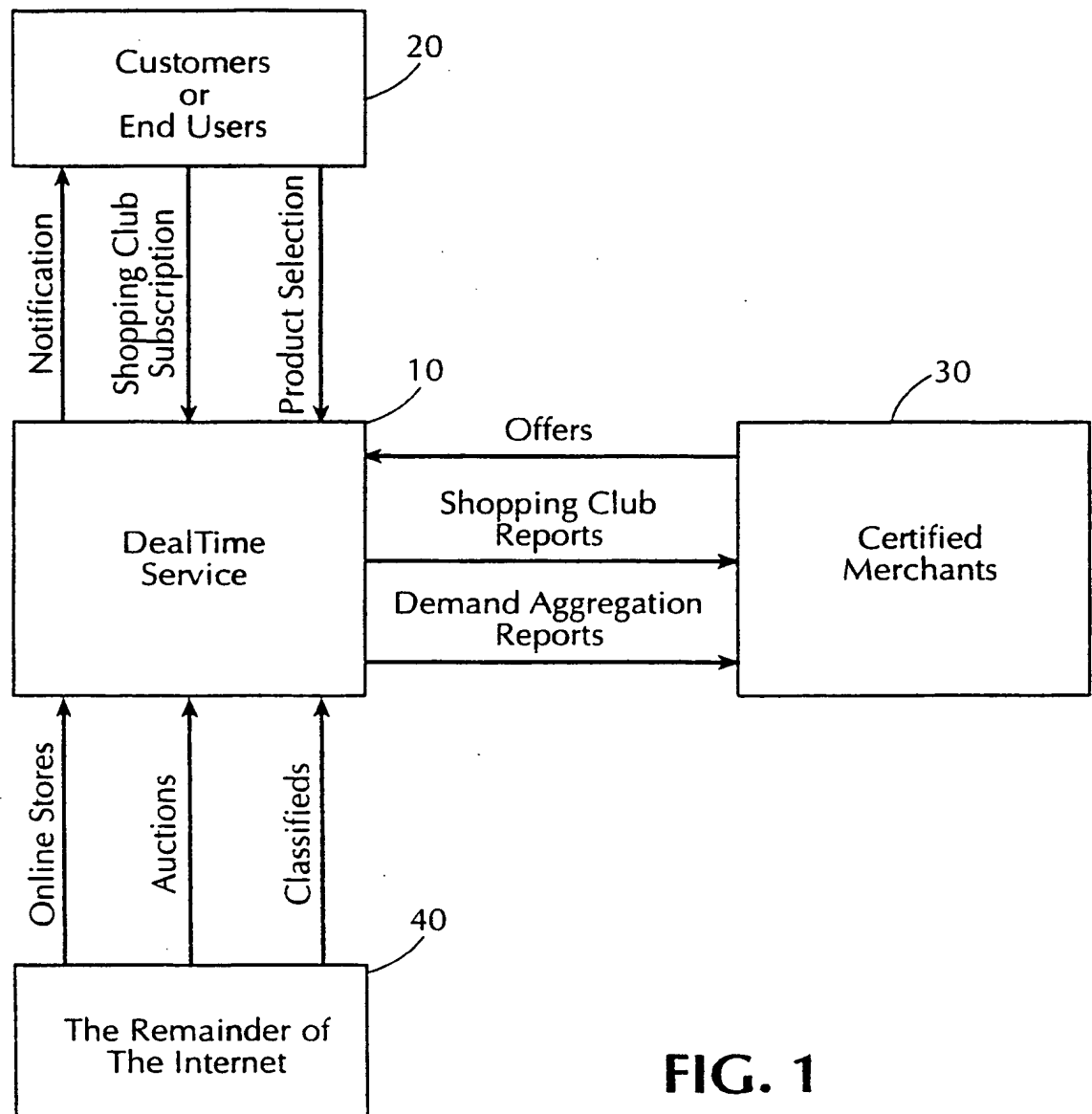
1 56. The method of claim 49 wherein step (D) comprises notifying the customer of the
2 merchant and of the offer when the customer accesses a Web page.

- 1 57. A system for aggregating demand, comprising:
2 (A) a server connected to a computer network;
3 (B) a module operating on the sever that can permit a merchant access over
4 the computer network to a history of requests made by one or more customers
5 over a time period;
6 (C) a module operating on the server that can accept from the merchant an
7 offer for sale of an asset, the merchant making said offer based on an analysis
8 of the history of requests made by the one or more customers over a time
9 period;
10 (D) a module operating on the server that can notify a customer of the
11 merchant and of the terms of the offer available over the computer network;
12 and
13 (E) a module operating on the server that can accept, from the customer, over
14 the computer network an indication of interest in purchasing at least some
15 of the asset.
- 1 58. The system of claim 57, further comprising:
2 (F) a module operating on the server that can repeatedly invoke the operating of
3 the modules described in (D) and (E) until a pre-defined time passes.
- 1 59. The system of claim 57, further comprising:
2 (G) a module operating on the server that can repeatedly invoke the operation of
3 the modules described in (D) and (E) until a pre-defined time passes.
- 1 60. The system of claim 57 wherein module (C) comprises a module operating on the
2 server that can accept an offer, the offer further comprising a maximum quantity
3 of the asset to be offered.

- 1 61. The system of claim 60 wherein module (E) comprises a module operating on the
2 server that can accumulate an indication of interest to purchase at least some of
3 the asset until the accumulation of indications of interest to purchase reaches the
4 maximum quantity of the asset to be offered.
- 1 62. The system of claim 57 wherein module (C) comprises a module operating on the
2 server that can accept an offer, the offer further comprising a time period for
3 which the offer will remain valid.
- 1 63. The system of claim 62 wherein module (E) comprises a module operating on the
2 server that can accumulate an indication of interest to purchase at least some of
3 the asset until the accumulation of indications of interest to purchase until the
4 time period for which the offer will remain valid expires.
- 1 64. The system of claim 57, further comprising a module that can notify a customer
2 of the quantity of the asset that remains to be purchased and the time remaining in
3 which the offer will be valid.
- 1 65. The system of claim 57 wherein module (D) comprises a module operating on the
2 server that can notify a customer of the merchant and of the terms of the offer via
3 e-mail.
- 1 66. The system of claim 57 wherein module (D) comprises a module operating on the
2 server that can notify a customer of the merchant and of the terms of the offer via
3 desktop notifier.
- 1 67. The system of claim 57 wherein module (D) comprises a module operating on the
2 server that can notify a customer of the merchant and of the terms of the offer via
3 pager.

- 1 68. The system of claim 57 wherein module (D) comprises a module operating on the
2 server that can notify a customer of the merchant and of the terms of the offer
3 when the customer accesses a Web page.

1/10

**FIG. 1**

2/10

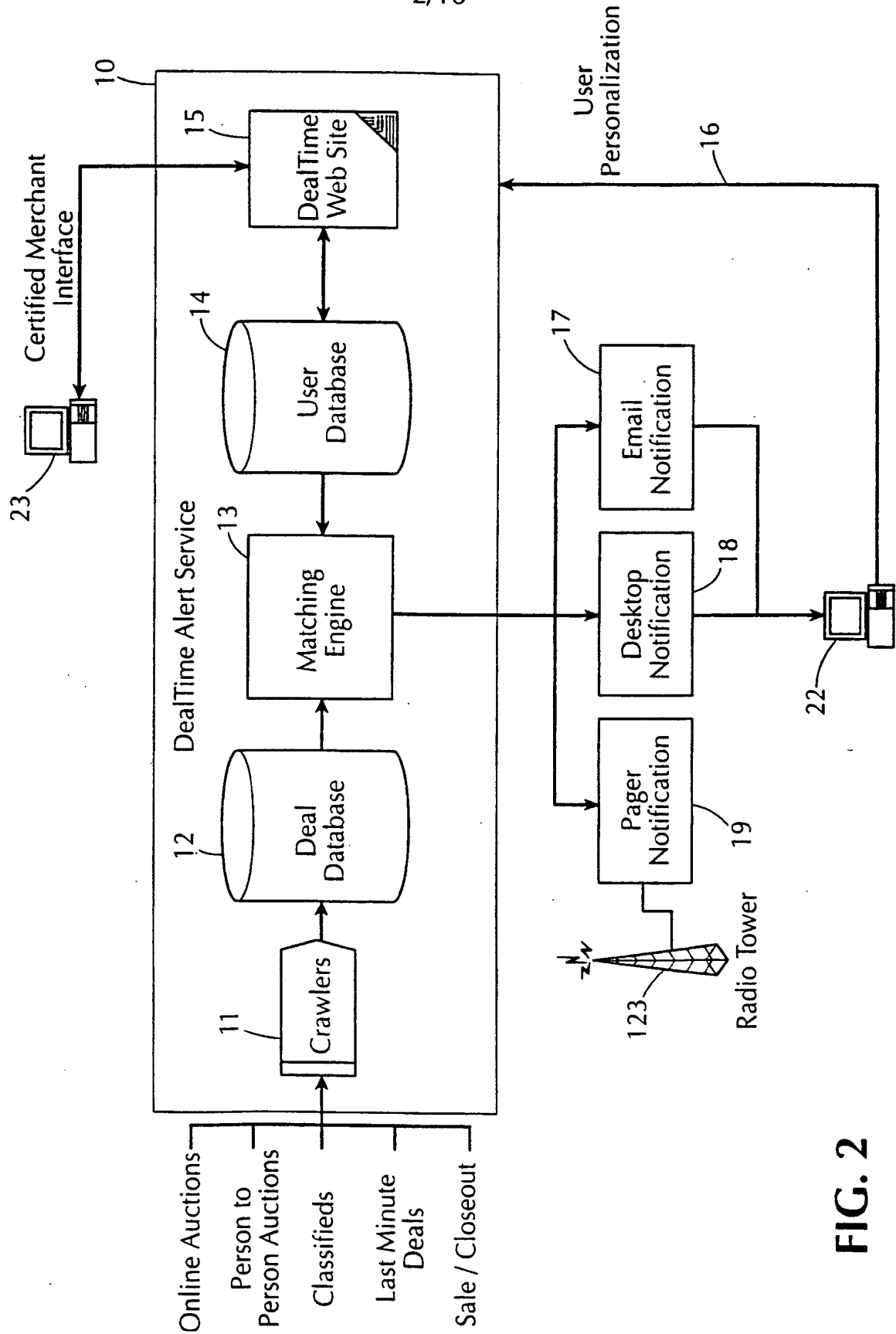


FIG. 2

3/10

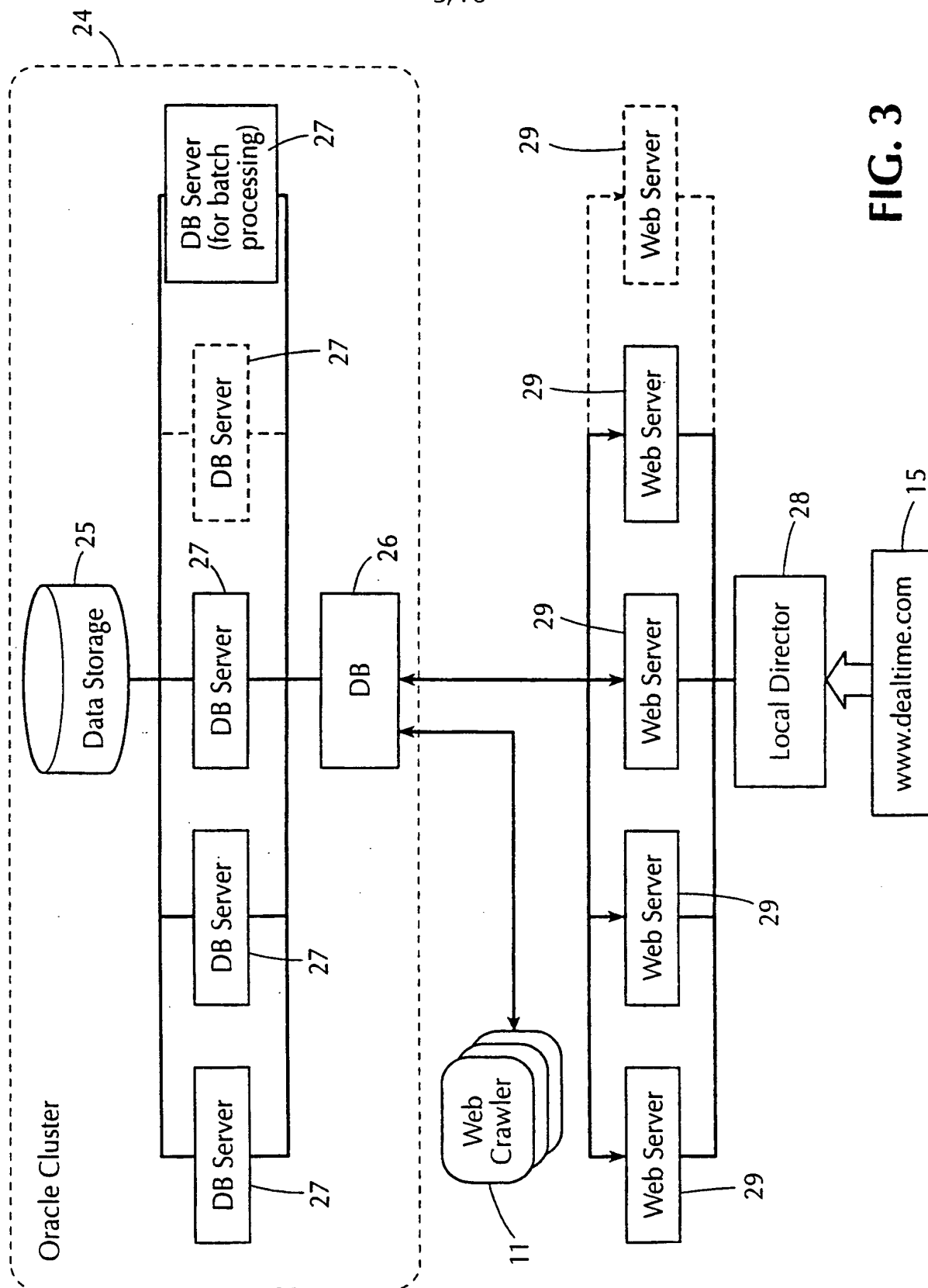


FIG. 3

4/10

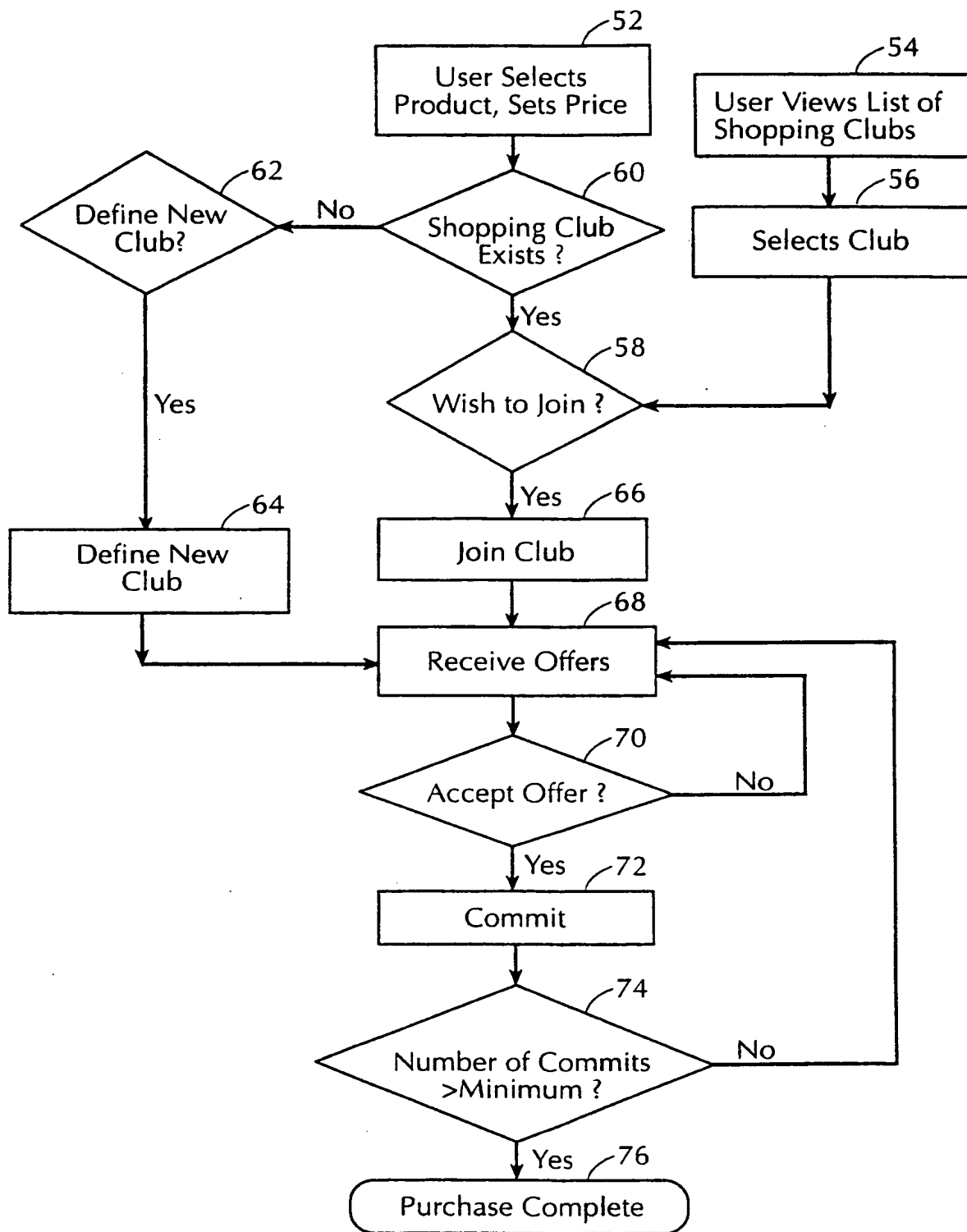


FIG. 4

5/10

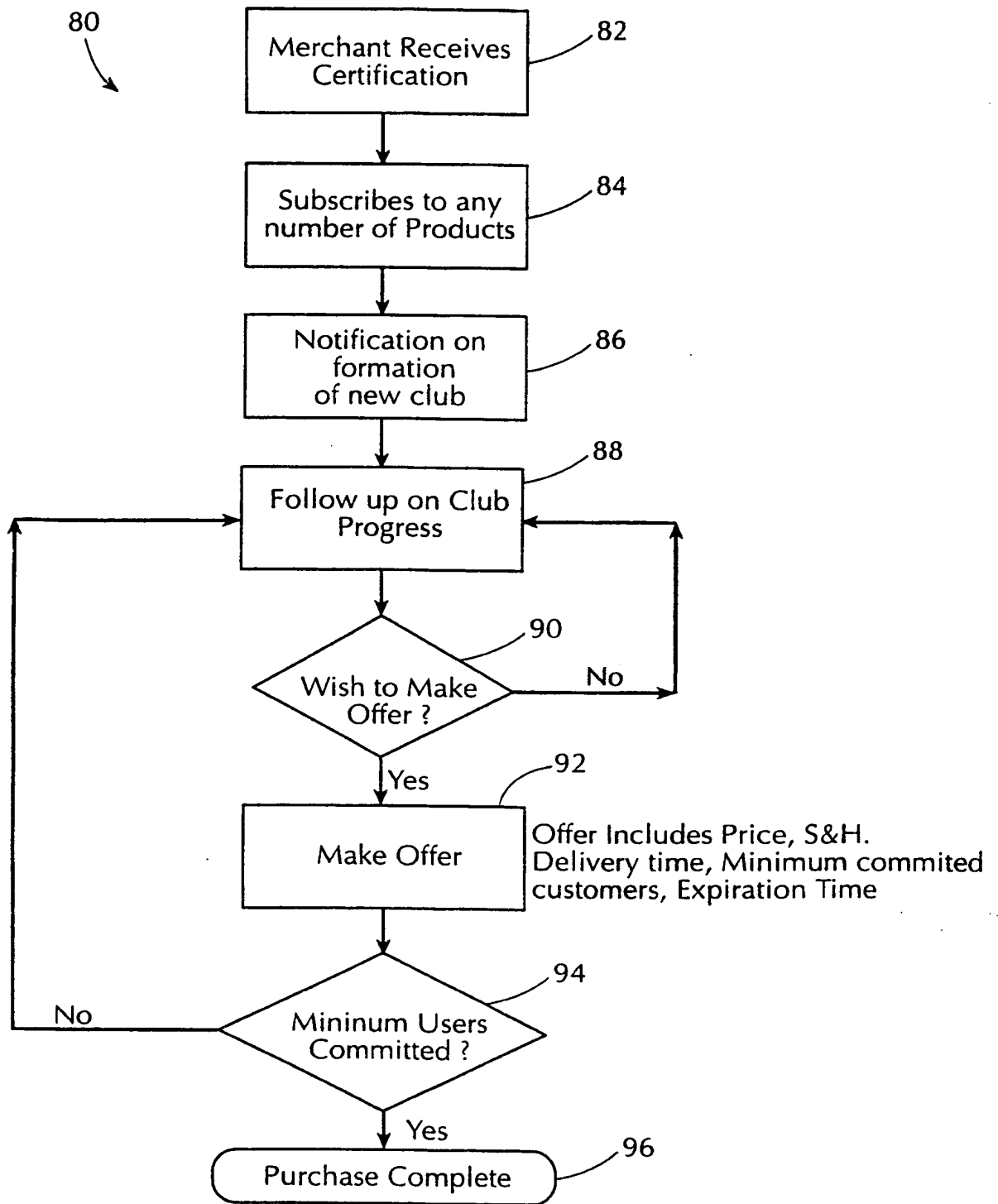


FIG. 5

6/10

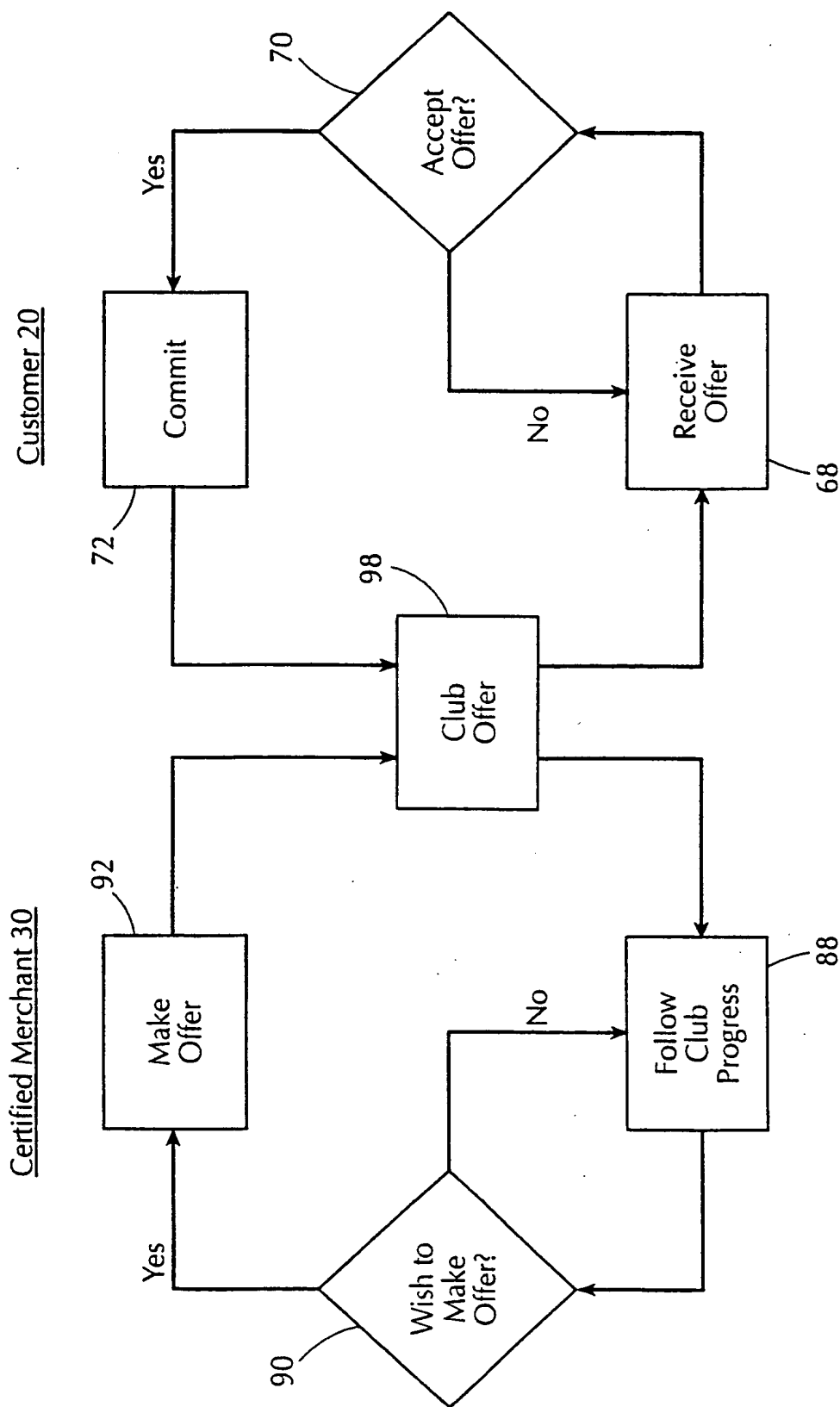
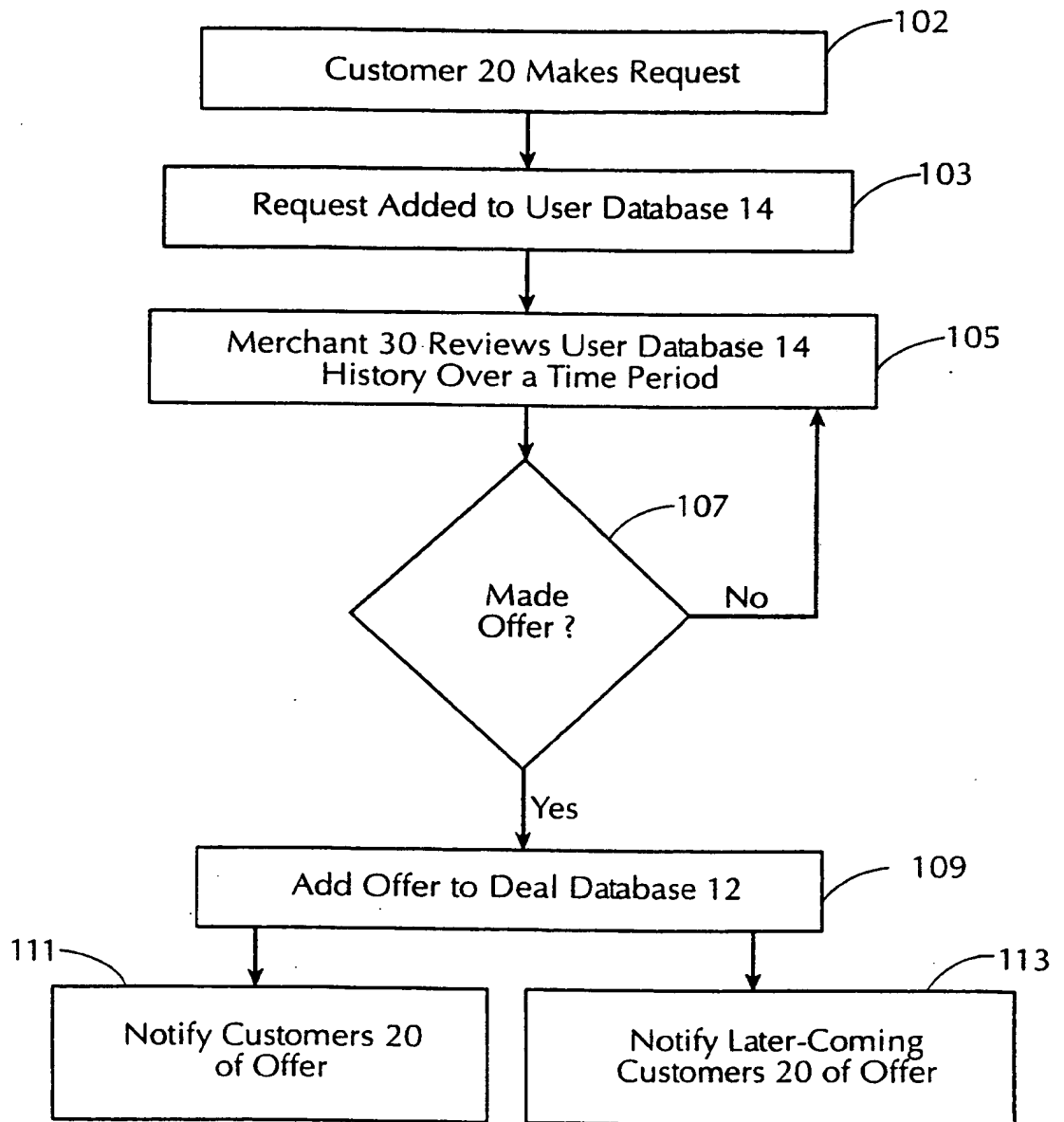


FIG. 6A

7/10

**FIG. 6B**

8/10

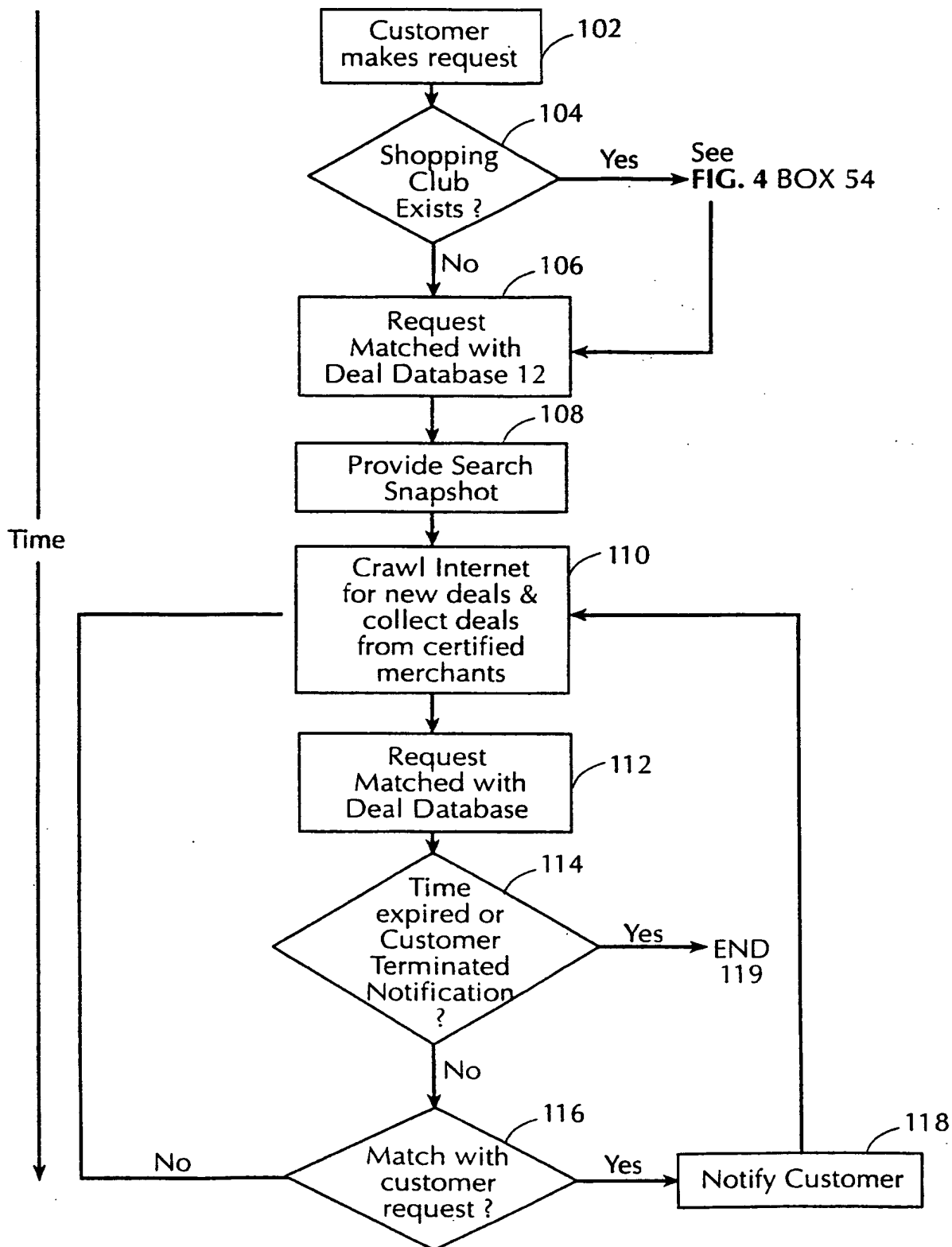
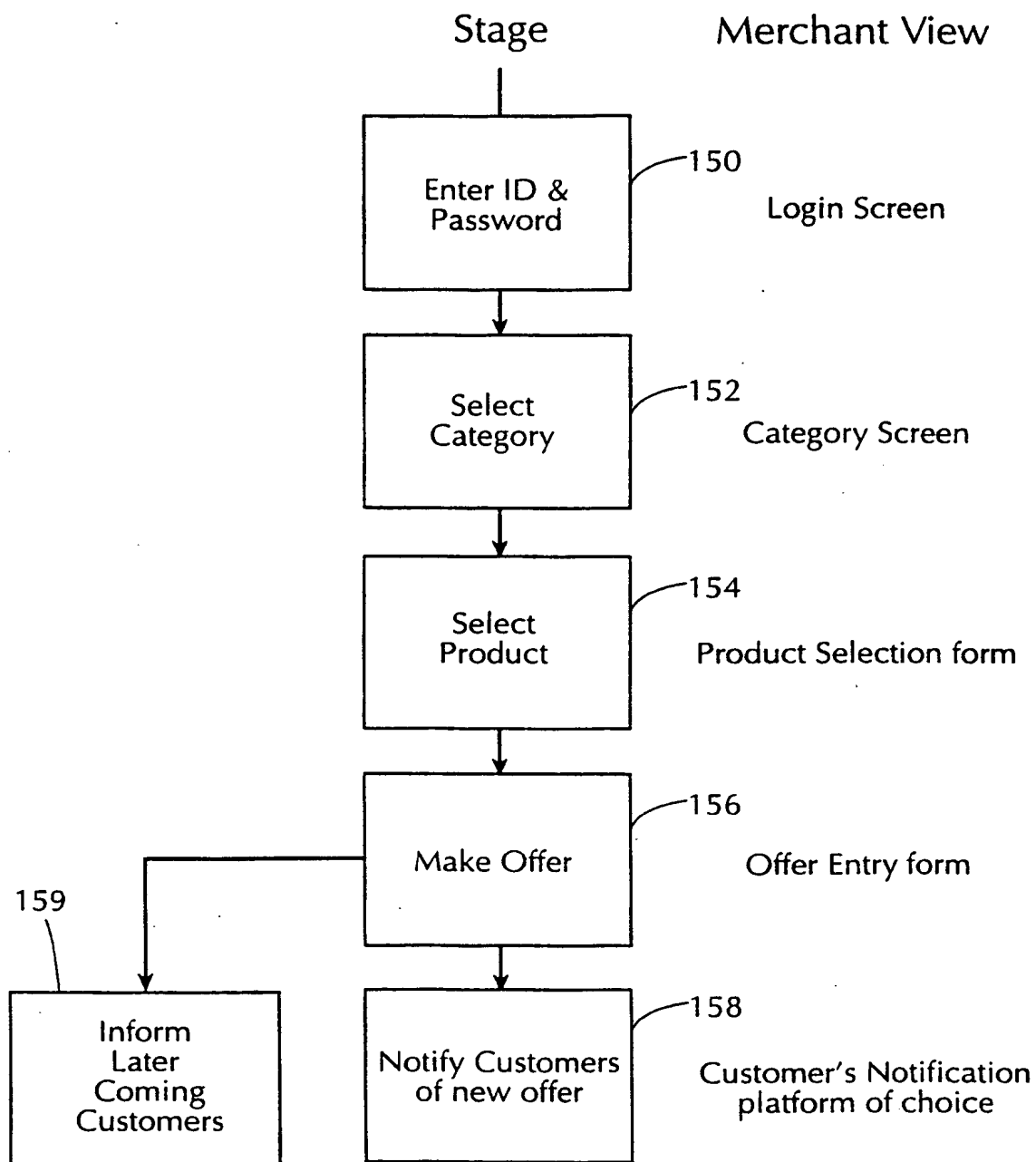


FIG. 7

9/10

**FIG. 8**

10/10

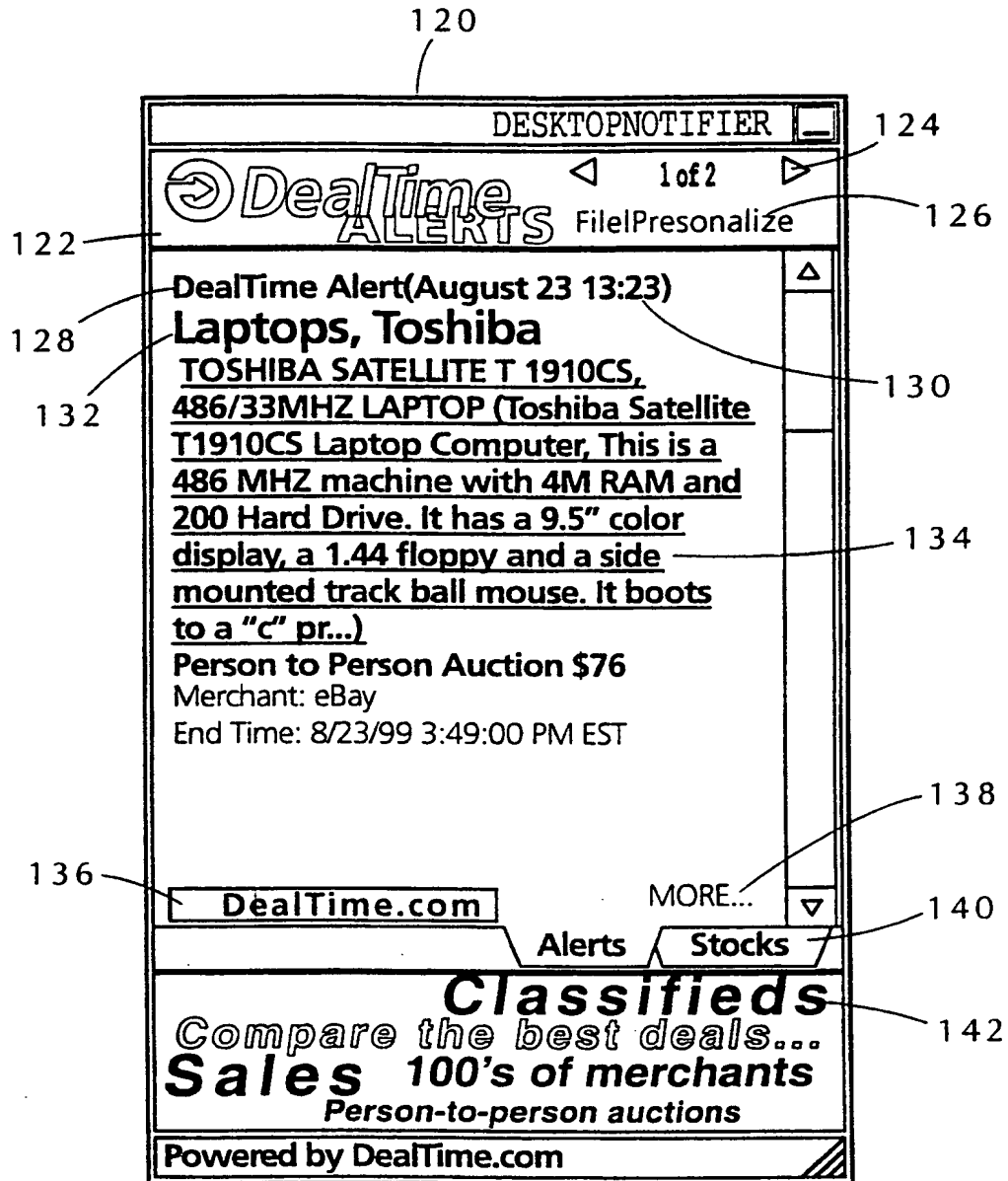


FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/02830

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : G06F 15/300, 7/00, 15/20, 17/60 US CL : 705/14, 26, 27, 37; 380/4, 23, 24, 25 According to International Patent Classification (IPC) or to both national classification and IPC														
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 705/14, 26, 27, 37; 380/4, 23, 24, 25 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) STN, WEST search term: online shopping, notifying, notice, message, offer, matching, bidding, auction.														
C. DOCUMENTS CONSIDERED TO BE RELEVANT														
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.												
X	US 5,794,207 A (WALKER et al) 11 August 1998, col. 1-6; col. 8-10; col. 12-20; col. 31-32	1-68												
A, P	US 6,014,644 A (ERICKSON) 11 January 2000, col. 2-5, col. 7-20; figures 1-2	1-68												
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.														
<table border="0"> <tr> <td>* Special categories of cited documents:</td> <td>*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>*A* document defining the general state of the art which is not considered to be of particular relevance</td> <td>*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>*E* earlier document published on or after the international filing date</td> <td>*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>*A* document member of the same patent family</td> </tr> <tr> <td>*O* document referring to an oral disclosure, use, exhibition or other means</td> <td></td> </tr> <tr> <td>*P* document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	*E* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*A* document member of the same patent family	*O* document referring to an oral disclosure, use, exhibition or other means		*P* document published prior to the international filing date but later than the priority date claimed	
* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention													
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone													
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art													
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*A* document member of the same patent family													
O document referring to an oral disclosure, use, exhibition or other means														
P document published prior to the international filing date but later than the priority date claimed														
Date of the actual completion of the international search 15 JUNE 2000		Date of mailing of the international search report 11 JUL 2000												
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer <i>James R. Mattheis</i> JAMES P. TRAMMELL Telephone No. (703) 305-9768												